

THE LONG ISLAND 100-MILE ENDURANCE TEST.

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ON ROSLYN HILL: A WARD LEONARD TONNEAU PASSING THE TOP,
READY FOR THE START AT JAMAICA.

THE 100-MILE ENDURANCE TEST ON LONG ISLAND.

Both in the number of entries and in the remarkable percentage of non-stop runs, the 100-mile endurance test on April 26, under the auspices of the Long Island Automobile Club, was successful beyond the anticipations of the most sanguine. Where the club had hoped to receive forty or perhaps fifty entries, no less than eighty-two were sent in, of which sixty-six were officially started in the run. Of the sixty-six starters, thirty-seven finished the course within the rules, and thirty-six of these obtained awards. The blue-ribbon winners numbered twenty-one, of which six were steam carriages, and two of the six carried condensers, which enabled them to make the run without even the allowed stops for fuel and water. Of the sixty-six starters, sixteen were steamers, and eleven of these were numbered among the thirty-seven. The time made on Roslyn Hill by the cup winner of the steam class, J. M. Page, equalled the time made by Percy Owen, winner in class D for gasoline vehicles



A "LOCOMOBILE."

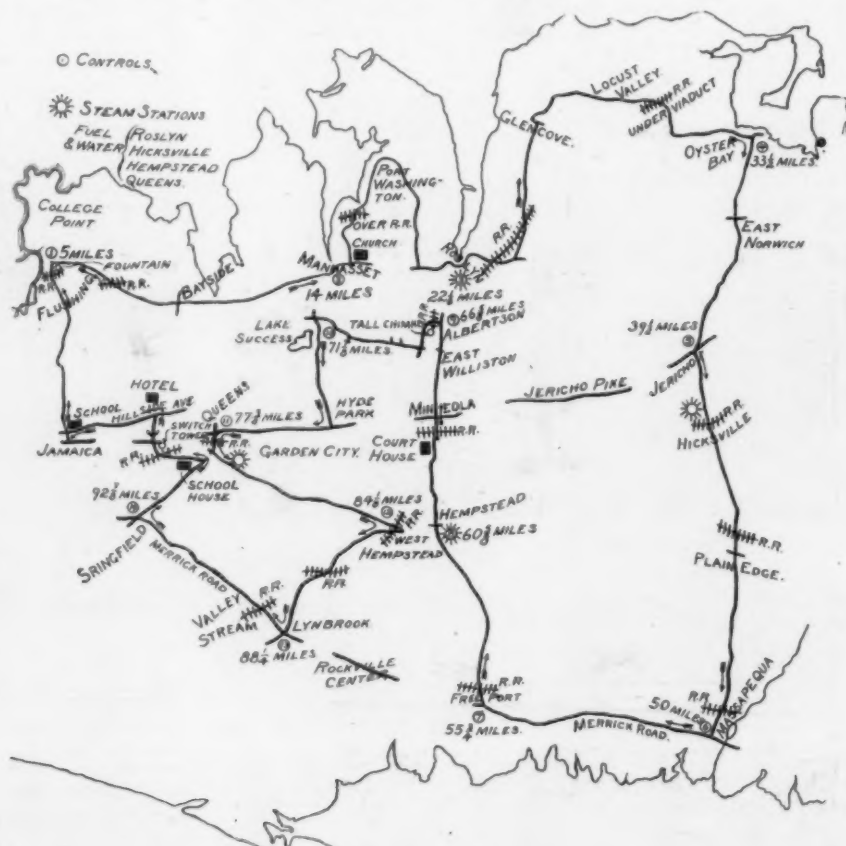
between 1,000 and 2,000 pounds. The best time up Roslyn Hill was 1 minute 19 seconds, and was made by Olivier H. Jones, driving a Rochet-Schneider 12-HP. car.

As last year, the club and prospective contestants listened to a lantern talk by Mr. H. B. Fullerton on the evening before the run. Mr. Fullerton probably knows the roads of Long Island more intimately than any other man, and his description of the course to be followed on the morrow, with every turn photographed and shown on the screen, was of great assistance to those able to hear it.

It rained a little in New York and Brooklyn during the night, and many took their places the next morning with more than a little apprehension that the experience of last year, when the sunny skies promised by the weather clerk veiled themselves in clouds and visited

torrents of rain on the long-suffering riders, would find a parallel this year. The fears of the pessimists proved happily groundless, but those optimists who predicted a cloudy day, with dust laid by nocturnal showers, were equally at fault. Five miles east of Jamaica it was not possible to discover any evidence of rain; the roads were dry and dusty, and a high southwest wind picked up the dust not only of the roads, but of the bare and

made by No. 11, driven by C. G. Wridgway, which covered the course in 400 minutes 9 seconds, official time, with no stop save one of a few seconds due to the switch accidentally being knocked open while working the lubricator pump. The 15-mile speed limit, though strictly enforced by the club, proved irksome to many, and practically all the machines had to "soldier" along the road not to exceed it. Whether through failure to real-



MAP OF THE COURSE.

sandy plowed fields as well, and flung it across the country in whirling clouds, which stung men's faces like small hailstones, nearly blinded those of the observers unprovided with goggles, and covered men and machines with thick coatings of whitish, yellow powder. Those riding south from Oyster Bay and from Hempstead were often unable to see the road, when a dust cloud struck them, for more than fifty yards ahead.

The start had been announced for ten o'clock, but the early ones were sent off half an hour early, a move necessitated by the large number of starters. So minute were the directions and road signs that few had difficulty in finding their way, and many, especially those familiar with the course, timed their pace with remarkable accuracy from control to control. The best record of this sort was

ize that the rule would be enforced, or from sheer impatience, the drivers of several machines ran appreciably above that speed; while at least eight machines, mostly of French manufacture, were obviously entered for the sole purpose of earning disqualifications of this sort, as they went over the course in flagrant disregard of the rules and of the rights of other users of the road.

Of the machines which missed their connections, one, No. 74, had the good luck to go astray at the very start, going straight out Jamaica Ave. instead of turning north at the Town Hall. It got as far as Massapequa before the alert observer—who, by the way, was Mr. J. H. Newberry, of the L. I. A. C. board of governors—concluded that a mistake had been made. Mr. Newberry telephoned back to Jamaica for a timer to await the

car and give it a fresh start; and the blunder, which was due to Mr. Newberry following a non-competing car instead of studying the map, was corrected by a fresh start just after one o'clock. This machine, by sticking to its schedule, secured not only a blue ribbon and the hill-climbing cup in its class, but also a special cup, which was offered for the fastest time on the hill regardless of rules, and which the agents of some of the disqualified machines, who had donated it, had expected to capture for themselves.

an Oldsmobile, gave up after repeated troubles, and took the Jericho Pike to Jamaica. No. 13, a Lane steamer, arrived at Jamaica, but cut the course. No. 17, a Locomobile, was delayed at Hempstead by a breakdown, requiring a tow. It repaired the damage and reported at the finish at half-past seven, but was disqualified by reason of having been towed.

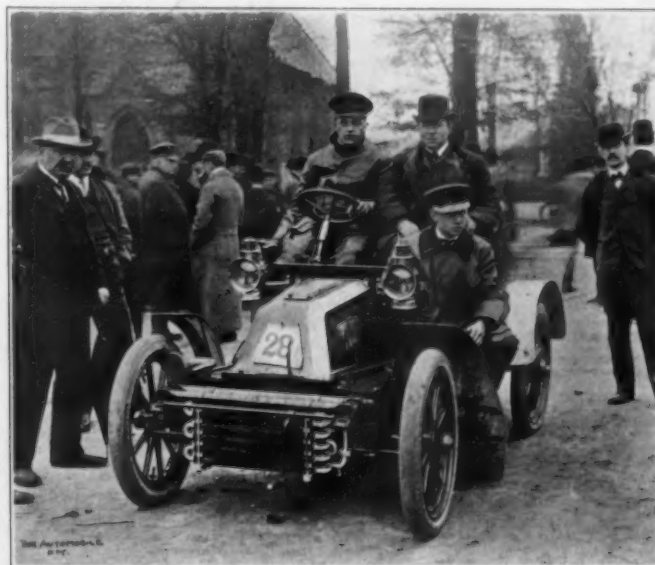
The 14-HP. touring car, of which so much was expected, was not completed in time to start, and the best records in the steam class was made by two of the three

Woodworth, dropped out soon after the start because its owner preferred to play the part of spectator. It carried a party of four, and by cutting corners saw the contest to good advantage at various points, besides earning at Jericho the gratitude of one observer by recovering his hat for him.

An inspection of the observers' cards from the 37 machines to finish within the rules shows, as would be expected, that ignition troubles predominated among the gasoline vehicles, and burner troubles,



A. L. McMURTRY IN HIS PACKARD.



GEORGE BANKER AND EARL P. MASON.



HARRY S. WOODWORTH IN HIS 24-HP. PANHARD.



PERCY OWEN AND T. HENRICE.

So far as ascertained, none of the steam vehicles which started abandoned the course except a Serpollet, the only one of that make, entered by Wm. P. Kennedy. This vehicle had trouble several times, and gave up beyond Hicksville. Of the others, No. 36, an Autocar, stripped its differential pinions near Jericho. No. 39,

White carriages, which made no stops. Another steamer, a special vehicle built by the Century Motor Vehicle Co., and equipped with a regular surrey engine and boiler, but carrying a very large water supply, took on gasoline and water only once during the run, at Hicksville. The 24-HP. Panhard, entered by Harry S.

among the steamers. As the various stops and their causes, while not always representative for the particular machines, may collectively be considered to represent fairly well the distribution of troubles in automobiles to-day, it has been thought worth while to tabulate them on page 133.

The 100-Mile Endurance Test, as it Impressed an Observer.

By Max Loewenthal, E. E.

It was with a heavy heart and full of expectancy, for who knew but I might be assigned to accompany the gigantic, gayly painted central station on wheels, No. 64, that I approached parlor (bed-room) seven of the hotel, where Chief Pardington conducted the lottery. After courteous salutation he smilingly permitted my trembling fingers to pick out a "sealed" envelope, which contained a card inscribed, "25, April 26, 1902," which meant that I was to accompany the vehicle entered as No. 25. I thereupon received three waterproofed yellow cards, one of which bore the "Information for Official Observers" and "Rules Governing Timekeepers," another eleven "Notices to Operators" on one side, and the "Time-keeper's Record" on the other, and a third on which was printed a map of the course, showing the route, the official control points, railroad crossings, etc. The time when each of the fifteen control points was to be reached, and the time at finish, were to be noted down in places left blank on the record card, but there was no space for marking the time of the start. There were also twelve spaces for noting down the duration and cause of all stops. In addition to these cards and a bright red badge, our symbol of authority, each observer received a lunch ticket and an "Official Programme," containing besides interesting club information, a useful detailed description of the course, prepared by Chairman H. B. Fullerton, of the Road Committee, and a list of all vehicles which had been entered.

Reference to this list showed me that vehicle No. 25 was of the steam type, entered by the White Sewing Machine Company, of Cleveland. To my surprise, I noticed that this machine, with two others like it, were entered in the "no-stop" class, which meant that the builders expected their machines to cover 100 miles without replenishing their water and gasoline supply, a proposition which the majority of contestants ridiculed. The 6 h.p. machine weighed 1,350 pounds, and seated two persons. It was equipped with a specially constructed condenser for endurance work, having a large cooling surface and looking not at all unsightly, even when attached to the front of the dashboard.

The start was not to be made until 10 a. m., but arrangements had been so splendidly perfected, and incidentally so many vehicles had already assembled, that the first vehicle was sent out soon after 9.30, the others following at 30 seconds intervals.

After my lunch, my goggles and myself had adjusted themselves in the handsome vehicle, and after a mutual introduction between the operator and myself, we were started off at 9.58 a. m., with a vehicle

of the same make 30 seconds ahead of us and another 30 seconds behind. We took our own time, but were warned not to return before six hours and forty minutes had elapsed, for if we did we would be disqualified. What a cheerful outlook! Six hours and forty-five minutes on a seat without a stop, for that was our determination, with a wind blowing which made even more noise than one of those French racers which passed us soon after we had started.

Not being a scenic artist or a poet, I shall desist from painting a picture of the scenes along the route, although we had plenty of opportunity and time to study the somewhat monotonous lowland scenery of the island. It was with some little difficulty that we accustomed ourselves to the slow speed of 15 miles per hour, and the temptation to exceed this limit was often very great. Especially so when one of the flyers passed us at a fearful and reckless gait. But they appeared

At noon we arrived at Oyster Bay, the home of Teddy. My partner remarked that there were many sand hills in this vicinity, and we agreed that this probably explains the great amount of sand in our strenuous President's make-up.

One third of our journey was now completed, and our lunch box depleted in the same proportion. After a monotonous ride of 17 miles directly across the island, we arrived at Massepequa at 1 p. m., and one-half of the route had been covered. We had in this part of our travels encountered a fierce gale which put a number of vehicles and fires out of commission.

After passing through Mineola, we reached Albertson, Station 9, at exactly 2 p. m., two-thirds of our journey having been completed. While we had passed a number of "steam stations" where steam vehicles were to replenish their water supply, we had made no use of their invitation to "take water," although we



THE THREE WHITE STEAMERS AT THE FINISH.

to me much like the dogs along the route who did a lot of useless barking, but did no harm, for all their scorching only ended in disqualification.

The first observer's station, at Flushing, was reached at 10.17, after we had passed a Serpollet and a gasoline machine and had exchanged greetings with President Shattuck, of the A. C. A., Roslyn; the third station was reached an hour later, and we had now become accustomed to the red flags indicating a turn to the right and the white flags indicating a left turn, as well as to straying automobiles and some which had bravely, but sadly "fallen by the wayside." A shouting multitude lined up along an 8 per cent. hill conveyed the intelligence to us that we were on Roslyn hill, on which the hill-climbing contest was to be decided. It was too late, however, to speed up the machine now, and while we climbed the hill easily and in splendid time, we had, to our sorrow, made no attempt at racing. This was about the only part of the route which had any snap to it, and that was mainly due to the photographers who had stationed themselves at that point.

had made no inspection to find out how low our supply had run.

West Hempstead, station 12, was 84½ miles from the starting point, and we were cheered by an official when we gave him a negative reply to his question whether we had made a stop. The other two White vehicles had stayed with us along the entire route, and one of them had made a brief stop in order to relight the fire. Springfield, Station 14, was reached at 4.06 P. M. From this point until we reached the final station we passed a long line of vehicles, all of which had to slacken their speed so as not to reach Jamaica before 6 hours and 40 minutes had elapsed, and my eye was fixed almost constantly on the watch before me, which warned us that our speed must be reduced to about 10 miles per hour. We soon struck beautiful Hillside avenue, and a level road brought us dashing into the heart of Jamaica back to Pettit's hotel, finishing the run in 6 hours 40 minutes and 50 seconds, certainly a very narrow margin.

While the surprise of everyone was great upon hearing that two of these ve-

hicles had made the trip without a single stop, the surprise was even greater when it was found that one of the machines had only used about 6 gallons of water and from 8 to 9 gallons of gasoline. As one of the gasoline operators observed, this vehicle used about as much water in its boiler as most gasoline machines use for cooling purposes. We felt almost certain of two blue ribbons, although at the time of this writing the awards have not yet been announced. It was an interesting, unique and remarkable performance, for it is a general belief that from 25 to 30 miles is the limit of continuous running for a steam vehicle.

The secret of the success of this vehicle is the small amount of water which has to be evaporated per HP. hour, namely, from 25 to 30 lbs., which can easily be condensed by the condenser designed for this purpose. The steam pressure varied between 100 and 400 lbs., while the air gauge hovered around 35.

After having shaken hands with friends and admirers of the machine and disposed of some of the Long Island soil which had transferred itself from the road to our own persons, we continued our travels from Jamaica to Irving Place, Manhattan, without replenishing our water and gasoline supply.

Here I departed, after thanking Mr. White for the genuine pleasure I had experienced by riding in one of his record-breaking steam vehicles and filled with admiration for the officials of L. I. A. C. and the splendid roads of Long Island.

Notes.

To students of American progress in vehicle construction, the fact that blue ribbon awards in the endurance run went not only to standard makes of heavy machines, but also to light vehicles like the Knickerbocker and the Oldsmobile, is a most encouraging sign.

Following is the list of machines which started in the run, but failed to cover the course or were disqualified for speed:

No. 3, 16-HP. Darracq, 2 pass., entered by American Darracq Co.; No. 4, 9-HP. Darracq, 2 pass., C. J. Field; No. 7, 24-HP. Panhard-Levassor, 4 pass., Harry S. Woodworth; No. 9, 9-HP. Haynes-Apperson, 2 pass., Geo. M. Brown; No. 10 Toledo steam carriage, 2 pass., H. B. Weaver; No. 14, Lane steam runabout, 2 pass., Lane Motor Vehicle Co.; No. 16, 6-HP. Knoxmobile, 2 pass., Knox Automobile Co.; No. 17, Locomobile, 2 pass., Lawrence Abraham; No. 22, 8-HP. De Dion, 2 pass., Kenneth A. Skinner; No. 31, 12-HP. Panhard-Levassor, 4 pass., John Grant Lyman; No. 36, 8-HP. Autocar, 2 pass., G. H. Leavitt; No. 39, 4-HP. Oldsmobile, 2 pass., C. C. Singer; No. 40, 5-HP. Ward Leonard, 2 pass., Ward Leonard Electric Co.; No. 49, 7-HP. Long Distance car, 2 pass., U. S. Long Distance Co.; No. 52, Locomobile, 2 pass., Locomobile Company of America; No. 55, 9-HP. Darracq, 2 pass., American Darracq Co.; No. 59, 5-HP. Automotor (Kelecom motor), 2 pass., A. H. Funke; No. 62, 7-HP. Long Distance, 2 pass., F. E. Lewis, 2d; No. 65, 12-HP. Fournier-Searchmont, 2 pass., R. A. Greene; No. 66, Serpollet steam car, 2 pass., Wm. P. Kennedy; No. 69, 8-HP. Fournier-Searchmont, 2 pass., E. B. Gallaher; No. 71, 7-HP.

LIST OF AWARDS.

NO STOPS—100 PER CENT.

Blue Ribbon.			
No.	Entered by.	Motive power.	Hill time.
6.	International Motor Car Co.	Steam.	Toledo. 2:10
8.	George N. Pierce Co.	Gasoline.	Pierce. 6:42
13.	J. Insley Blair.	Gasoline.	Panhard. 7:22
15.	Lane Motor Vehicle Co.	Gasoline.	Lane. 2:34
24.	White Sewing Machine Co.	Steam.	White. 2:06
25.	White Sewing Machine Co.	Steam.	White. 2:20
30.	Ohio Automobile Co.	Gasoline.	Packard. 2:03
33.	Century Motor Vehicle Co.	Gasoline.	Century. 2:07
38.	Elmore Manufacturing Co.	Gasoline.	Elmore. 3:57
41.	Ward-Leonard Electric Co.	Gasoline.	Knickerbocker. 3:35
42.	Ward-Leonard Electric Co.	Gasoline.	Knickerbocker. 5:03
45.	M. Piel.	Gasoline.	Haynes-Apperson. 2:33
46.	H. S. Chapin.	Gasoline.	Haynes-Apperson. 4:45
47.	W. J. Stewart.	Gasoline.	Autocar. 2:30
49.	Central Auto Co.	Gasoline.	Peugeot. 1:46
52.	Olds Motor Works.	Gasoline.	Oldsmobile. 4:16
53.	International Motor Car Co.	Steam.	Toledo. 11:46
59.	A. L. McMurtry.	Gasoline.	Packard. 2:06
56.	Percy Owen.	Gasoline.	Winton. 1:42
57.	Winton Motor Car Co.	Gasoline.	Winton. 2:50
74.	Alexander Fischer.	Gasoline.	Rochet-Schneider. 1:19

Red Ribbon.			
No.	Entered by.	Power.	Hill time.
1.	Prescott Auto Mfg. Co.	Steam.	Prescott. 1:59
11.	Peerless Mfg. Co.	Gasoline.	Peerless. 4:04
23.	E. E. Britton.	Gasoline.	Panhard. 2:08
26.	White Sewing Machine Co.	Steam.	White. 2:08
68.	Wheel Within Wheel Co.	Gasoline.	Gasmobile. 4:14

Yellow Ribbon.			
No.	Entered by.	Power.	Hill time.
18.	Automobile Company of America.	Gasoline.	Gasmobile. 3:42
21.	Automobile Company of America.	Gasoline.	Gasmobile. 6:46
27.	Torbensen Gear (Inc.).	Gasoline.	Torbensen. 10:42
35.	Peerless Mfg. Co.	Gasoline.	Peerless. 4:52
43.	Ward-Leonard Electric Co.	Gasoline.	Knickerbocker. 5:36
53.	Locomobile Company of America.	Steam.	Locomobile. 1:42

White Ribbon.			
No.	Entered by.	Power.	Hill time.
63.	H. Michener.	Gasoline.	Haynes-Apperson. 4:19
70.	U. S. Long-Distance.	Gasoline.	U. S. Long-Dist. 5:38

Very Highly Commended.			
No.	Entered by.	Power.	Hill time.
54.	Grout Bros.	Gasoline.	Grout. 2:06
79.	W. H. Owen.	Gasoline.	Gasmobile. 3:05

Highly Commended.			
No.	Entered by.	Power.	Hill time.
2.	Prescott Auto. Mfg. Co.	Steam.	Prescott. 2:40

CAUSES OF STOPS.

CHAIN TROUBLES.			
Hr. Min. Sec.	Machine.	Remarks.	
1 03 00	No. 21	Pump chain.	
06 00	No. 70		
15 00	No. 70		
1 02 00	No. 70		

BURNER.			
Hr. Min. Sec.	Machine.	Remarks.	
10 00	No. 1		
10 00	No. 1		
05 00	No. 1		
02 30	No. 26		

IGNITION.			
Hr. Min. Sec.	Machine.	Remarks.	
11 25	No. 18	Spark plug fouled.	
01 44	No. 18	Oil on contact spring.	
09 00	No. 21	Spark cam shifted.	
04 00	No. 63	Poor batteries.	
04 00	No. 63	Poor batteries.	
01 30	No. 63	Poor batteries.	
13 00	No. 43	Broken wire.	
15 00	No. 70	Contact sparkler.	
10 30	No. 68		
06 30	No. 35	Adjust trembler.	

PUMPS.			
Hr. Min. Sec.	Machine.	Remarks.	
01 30	No. 18		
05 30	No. 54	Had to pump by hand	
05 00	No. 54		

HOT BEARINGS.			
Hr. Min. Sec.	Machine.	Remarks.	
05 35	No. 18		
05 00	No. 27	Clutch gripped.	
10 00	No. 27	Hot gear box.	

STEAMERS—FUEL AND WATER.			
Hr. Min. Sec.	Machine.	Remarks.	
07 00	No. 1	Water.	
27 00	No. 1	Gasoline.	
35 00	No. 1	Gasoline.	

GASOLINE VEHICLES—FUEL AND WATER.			
Hr. Min. Sec.	Machine.	Remarks.	
07 30	No. 68	Gasoline.	
06 00	No. 79	Water pipe leaking.	
23 00	No. 79	Water pipe leaking.	
18 00	No. 79	Water pipe leaking.	
20 00	No. 79	Water pipe leaking.	

DIRT IN CARBURETER.			
Hr. Min. Sec.	Machine.	Remarks.	
10 00	No. 23		
04 30	No. 35		

MISCELLANEOUS.			
Hr. Min. Sec.	Machine.	Remarks.	
30	No. 43	Gear shifter stuck.	
02 00	No. 53	Waste under seat on fire.	
45	No. 54	Tightening lugs on tire.	
02 00	No. 21	"Gasoline feed."	
03 00	No. 21	"Gasoline feed."	
06 24	No. 18	"Clean up."	
00 00	No. 53	Disconnected pump nipple.	

Three other stops, cause accidental or not clearly defined, aggregating 1 min. 35 secs.

Long Distance, 2 pass., I. W. England; No. 73, 4-HP. Oldsmobile, 2 pass., Oldsmobile Co.; No. 75, 12-HP. Panhard-Levassor, 2 pass., Benj. B. Tilt; No. 76, 6-HP. Friedman, 2 pass., B. M. Young; No. 77, 7-HP. Long Distance; No. 80, Fournier-Searchmont, type 3; No. 82, Renault.

Thirteen of the entries were not started. They include, among others, the following makes: Overman Automobile Co. (14-HP. touring car), Waverley electric, Gasmobile, Foster, Prescott, Autocar, Haynes-Apperson (Mr. H. S. Chapin's survey, which had been sent to the factory to be rebuilt, and was not shipped back in time to start), Locomobile, Darracq, Reading, Panhard, Fournier-Searchmont.

ROSLYN HILL-CLIMBING TEST.

Class A.—For Steam Vehicles; All Weights and Powers.	
J. M. Page.....	Locomobile. Time, 1:42 (Entered by Locomobile Co. of America.)
Class C.—Gasoline Machine; Under 1,000 lbs.	
W. J. Stewart	Autocar. Time, 2:30
Class D.—Gasoline Machines; Between 1,000 and 2,000 lbs.	
Percy Owen	Winton. Time, 1:42
Class E.—Gasoline Machines; Over 2,000 lbs.	
Olivier Jones	Rochet-Schneider. Time, 1:19 (Entered by Alexander Fischer.)

The winner of this class is also the winner of the special cup offered for the fastest climb, irrespective of weight or power.

The Darracq Gasoline Cars.

These machines, which are among the best known of light cars abroad, and which have quite recently been introduced into this country, is built in two styles rated at 9 and 16 h.p., with single and double cylinder motor respectively. They have a framework of steel tubing brazed together, and the motor is carried on this main frame instead of on the more usual false frame. The gear changing mechanism comprises three forward speeds and one reverse by sliding gears. The second shaft in the gear box carries a brake wheel near its rear end outside of the box. Just back of this, a short universally jointed shaft communicates motion to the bevel pinion driving the rear axle. The short bevel pinion shaft, and the rear axle, are carried in ball-bearings, the construction being clearly shown in the line cut. A large case surrounds the bevel pinion and gear, and a tube rigidly attached to the case parallel to the jointed shaft acts as a distance rod, its other end being attached to the gear box and the cross sill supporting the latter. A handle just below the steering wheel shifts the gears for the three forward speeds; and to operate the reverse it is brought to the neutral position between the first and second speeds, and a short lever rising through the footboard just in front of the seat is pushed forward to engage the reverse.

The motor itself has a maximum speed of 1,400 turns. A governor on the front end of the crank shaft, inside the case, acts on a shutter inside the inlet valve cage. This circular shutter is pierced with several holes, which correspond with other holes in the cage itself, and by turning the shutter the passage for the gases is more or less obstructed. An auxiliary spring, connected to the governor, may be tightened by the driver through the pedal, thus reducing the action of the governor and accelerating

about three gallons, and the gasoline tank, which is on the back of the footboard, holds five gallons. The lubricating oil tank is adjacent to the water tank, and oil is fed from it to the crank case of the motor by a plunger pump worked by the driver.

The Rochet-Schneider 12-HP. Touring Car.

The Rochet-Schneider car, shown in our illustration, is the one that entered in the Long Island Endurance Run as No. 74. Driven by M. Olivier H. Jones, traveling representative of Rochet-Schneider

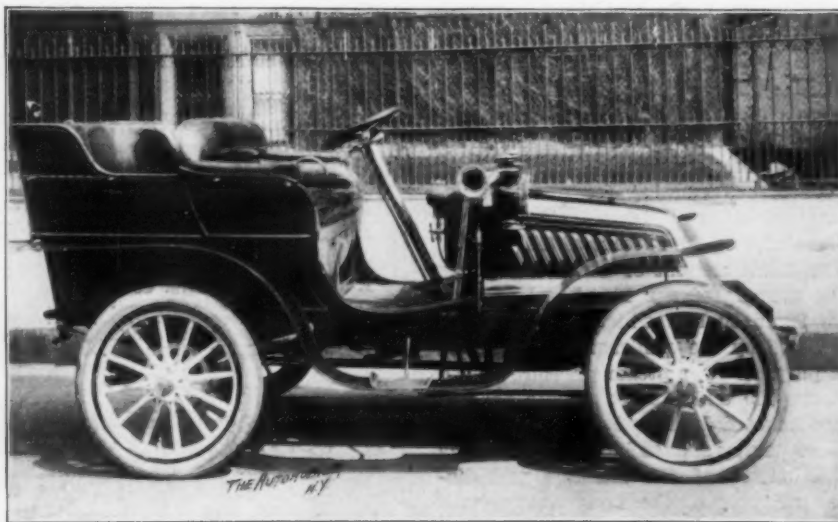


FIG. 1. THE 16-HP. DARRACQ CAR.

The 9 h.p. Darracq machine has direct steering gear, there being no reducing mechanism between the steering wheel and the steering knuckles. The 16 h.p.

it not only went over the course without a stop, but it won the hill climbing contest as well, taking the 2,800 feet of 7 per cent. grade in 79 seconds, beating by some 20 seconds the next best time on the official records. It is the 1902 Rochet-Schneider model, with a four-cylinder motor rated at 12 HP. but probably capable of doing 16, and it weighs approximately 2,000 pounds without the tonneau. This model is distinguished by several feat-

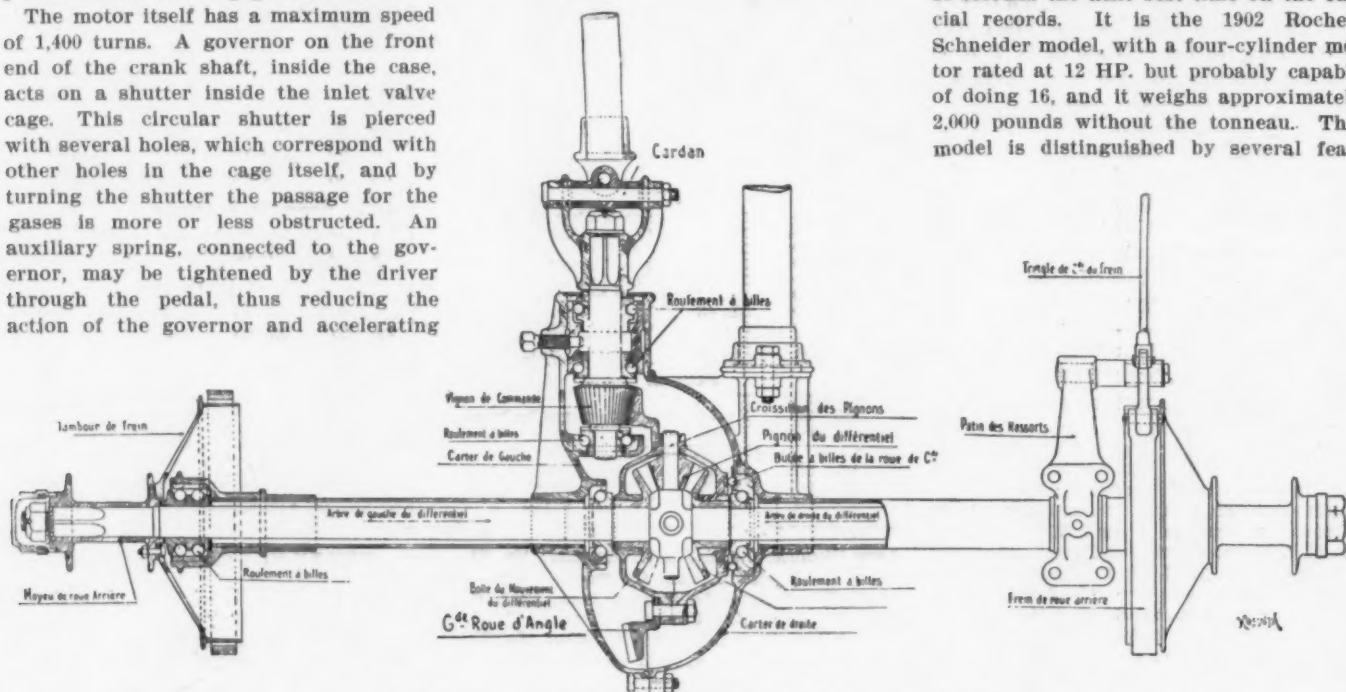


FIG. 2. REAR AXLE CONSTRUCTION OF THE DARRACQ CAR.

the motor. A mixture regulator and spark controller are carried on the steering column.

The pump is directly geared to the engine shaft, and circulates the jacket water from the motor to the tank and thence to the radiating coils. The water tank, which is attached to the front of the dashboard next to the motor, holds

car, however, has a worm reducing gear. It differs otherwise from the lighter machine in being about 7 inches longer and in having a somewhat heavier running gear. This is the type shown in the illustration, which shows a car lately purchased by Mr. Albert Gallatin, son of Frederic Gallatin, the banker, of 670 Fifth avenue, New York.

ures, notably by the use of ball-bearings in all four wheels, and for the sprocket ends of the countershaft, and by a throttling governor which renders the car remarkably quiet in action. This governor acts on two butterfly valves, one in each of the inlet pipes by which the two pairs of cylinders are supplied. A supplementary spring, whose tension is regulated

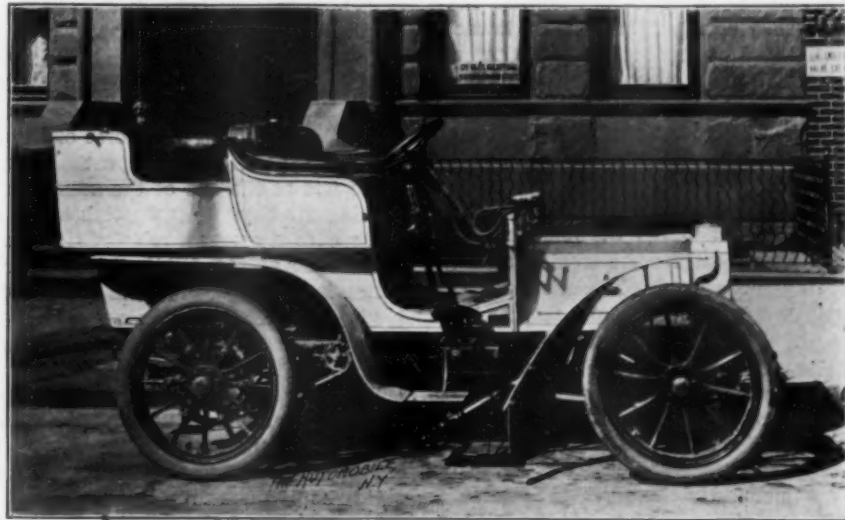
by the operator, causes this governor to close the valves at any desired speed, and this permits the car to be run as slowly as desired on the first speed without the accompaniment of intermittent volleys of sharp exhausts, so familiar to drivers of the Panhard and similar cars. On account of this silence in action, the clutch may be freely used for reducing speed, the motor making no more noise when running light than when working.

The speed changing system comprises two separate gear sleeves in the lower of flywheel shaft in the gear case. One of these sleeves has two pinions of equal size for the first speed and reverse. These are spaced a little distance apart, leaving a neutral position between them; and when the sleeve, going out of the first speed, passes the neutral position, it picks up a pinion on an intermediate shaft, the reversing pinion on the sleeve meshing with the latter, and this intermediate position is then carried along with the sleeve until it engages the gear on the second shaft which lies just above. The other sleeve carries the pinions for the second, third, and fourth speeds. These two

arm, which slips into one or the other of the forks just mentioned, according as the rock shaft is shifted a little to the left or right, and then, picking up one or the other fork, carries the shifting rod with it forward or back. The second pinion sleeve above mentioned has a neutral position between the second and third speeds, and to insure that either sleeve shall be left in its neutral position when the other is picked up, the hand lever works in a slotted plate, of which the inner slot gives the first speed or reverse according as the lever is at the front or

about four inches thick from front to back, covering the whole front of the space under the motor bonnet, and pierced by a large number of small air tubes. A fan, driven at high speed by a belt from the motor shaft, compels an adequate draught of air through these tubes whatever the speed of the car, so that it may be run indefinitely even on the first speed without causing the water to boil.

There are two braking systems, the first a foot brake acting on the differential, and the second a pair of band



THE ROCHET-SCHNEIDER 12-HP. CAR.

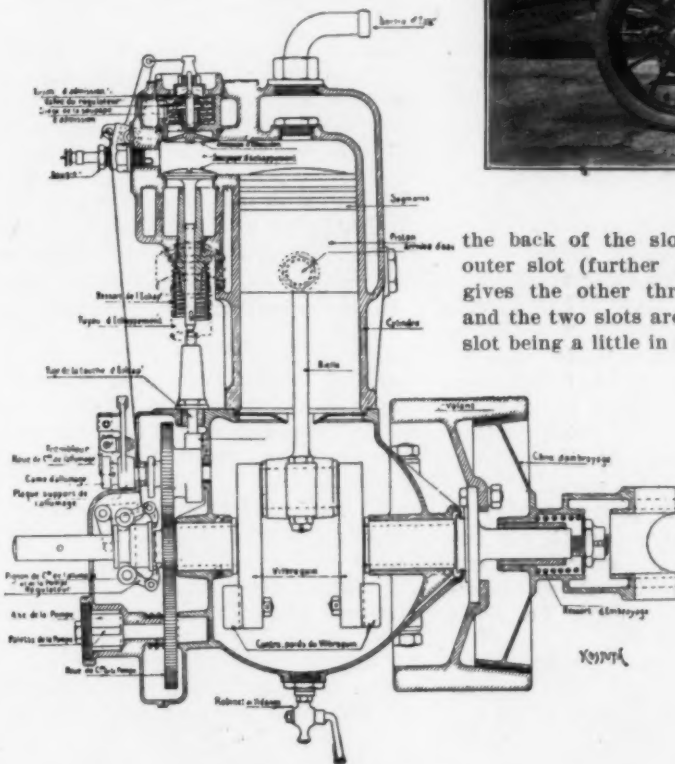


Fig. 3. THE DARRACQ MOTOR.

sleeves are shifted by parallel shifting rods so arranged so that, although wholly separate, they are operated by one lever. To accomplish this, the forward ends of the shifter rods terminate in forks which point across the axis of the machine and towards each other. Above these forks is a transverse fixed shaft on which slides a tubular rock shaft, to the right hand outer end of which is attached the lever grasped by the operator. From the other end of this rock shaft depends a rocking

the back of the slot respectively. The outer slot (further from the operator) gives the other three speeds in order; and the two slots are so placed, the outer slot being a little in advance of the inner, so that their neutral points are connected by a cross slot. Thus, from the neutral position indicated by this cross slot, the lever can pass at once to the reverse, first, second, or third speed at will, and from any speed but the fourth directly into the reverse. The gears shift with exceptional readiness, and a

representative of this paper, on a trial run with the machine, found that the changes from second to the third and fourth speeds, were almost inaudible, and the others hardly more so.

The motor is continuously lubricated by the Dubrule system, similarly to the Panhard. A single vaporizer is employed with the usual float feed. Cooling is accomplished by a "beehive" combination water tank and radiator, quite similar to the Daimler, and consisting of a tank

brakes acting on the rear wheels. Both systems are double acting. The latter system, applied by a hand lever latching on a sector, is single acting as usual, and considerably more powerful than the brake on the differential.

The frame of the machine is composite, of steel lined with wood; and the motor and box containing the speed changing gears are carried on a light angle iron false frame suspended at four points from the main frame. The wheel base is two metres or 79 inches, and the wheels are 810 millimetres or about 32 inches in diameter over the tires, the latter being 90 millimetres or 3.6 inches in section. The maximum speed of the machine is about 40 miles an hour.

The Rochet-Schneider cars, it may be of interest to note, scored a conspicuous success in the long distance "Course de vitesse" at Nice last year. Deducting neutralized towns the course was 400 kilometres or 243 miles in length. Thirteen machines started, including three Rochet-Schnelders, and the three Rochet-Schnelders were among the seven cars that finished. The event was won by Werner, with a 35 h.p. Mercedes, in 6 h. 45 m. 48 s. The second finish was a Rochet-Schneider of 24 h.p., time, 7 h. 11 m. 58 s.; and the other Rochet-Schneider cars came in fourth and seventh, respectively, the time of the last being 8 h. 21 m.

Faulty Steaming.

By Paul Norwood, M. D.

II. BURNER AND FIRE.

1. The burner has become overheated. E. Shows red, more distinctly seen if viewed immediately on turning out the fire. The management and care of the burner is a matter upon which a great deal of instruction should be given every purchaser of a steam automobile, much trouble might thereby be avoided and the life of the burner would be greatly prolonged. This redness mentioned is but one link in a chain of sequences beginning with imperfect combustion and ending with a scorched burner. It is most often caused at the beginning by low air pressure, poor fuel, and neglect to keep the burner clean. With a low pressure of air, the flame rests, as it were, on or too near the top plate of the burner, which becomes overheated. This burns the copper tubes and they scale, thus leaving a small crevice between the plate and the tube. This increases the trouble by augmenting the area of the outlets for the gas, which is equivalent to a further lowering of the air pressure; the flame drops still nearer the burner, and the tubes are further scaled until sufficient space exists between the tubes and the plate to permit the flame to pass inside the burner, when all of the gas then there present will be ignited and the characteristic explosion results. These will be repeated until the fire is blown out and your burner is "scorched" and useless until new tubes replace those not amenable to re-expansion. R. If the burner be simply overheated, it may be made to work by allowing it to cool for a few minutes, and even if badly scorched you will be able to get home by this occasional cooling. At earliest opportunity clean it as directed in No. 6 of this section.

2. Burner scorched. E. Repeated explosions sounding like the report of a distant gun; burner red and usually covered with foreign matter which is in a state of incandescence; peculiar odor at the chimney when fire is turned out; greatly deficient steam generating power. R. Take it out and remove all tubes that are burned, very loose or thin, and replace these in the same way that boiler tubes are put in. If you have any old tubes from the boiler use them; they are just as good as any. Have them sawed into proper lengths. (See that you get these tubes from whoever repairs your boiler.) Clean thoroughly and remove grease used in expanding, by pouring gasoline over the burner and burning it off.

3. Outer end of mixing tube not a proper distance from the gas injector. E. Yellow flame; smoke; odor at chimney while burning. R. Adjust so that this interval is about one-half inch. It may be convenient to file off the outer end of the tube. See No. 14 of section under fuel.

4. Mixing tube is rotated or upside down. E. Much smoke and odor; yellow flame. R. It is usually righted without difficulty, as there is commonly some mark, usually at the top, to indicate its proper position.

5. Inner end of mixing tube not properly bent. E. If bent too much inward there will be a great deal of smoke and yellow flame. According to my experience you will have to make repeated trials before you will succeed in getting the best possible result, as a very little bend makes a great deal of difference in the flame. The aim is so to direct the incoming column of gas as to distribute it as evenly as possible throughout the burner, giving a pure blue flame, which at no point jumps above the burner. If there be too much bend the result will be as stated; if too little, the incoming force of the gas will be expended almost entirely upon those jets at the end of the mixing tube, causing the flame to jump high above the plate with a correspondingly low flame at all other points. While this latter condition is unsatisfactory, it is preferable to having the tube bent too much, and so the most of the mixing tubes are sent out with as little bend as possible. This very insufficient method of distributing the gas leaves open a profitable field for experiment. As at present, the left side of the burner is almost never scorched, while the right side is almost never *not* scorched.

6. Small gas holes in the burner are occluded. This may be by dirt, small pieces of asbestos or metallic scale from the burner or the bottom of the boiler. E. Small jets of flame, and some of them not upright; the dirt or other foreign matter in a state of incandescence, history of smoke or dusty roads. R. Take out the burner and clean it by scraping with a flat tool. Do this carefully so as not to injure the tubes. Brush with nothing stiffer than a broom, shake out the dirt and scale from the inside. If this much be thoroughly done it will be unnecessary to spend an hour or more (as they sometimes do in the repair shop) cleaning out the gas holes with a wire. Be sure, however, that the holes are clear. See No. 1 of this section.

7. Dirt inside the burner. This may be dust, scale or other matter which may be carried upward by the currents of gas and held over the under side of the gas holes. It is more apt to occur on the right than on the left side of the burner, owing to the greater force of the gas currents on the former. E. Jets of flame are small and may diverge from the perpendicular. R. Take out and clean as in No. 6. Don't beat the burner as this tends to loosen the tubes. See Nos. 1 and 6 of this section.

8. Cracks in the upper plate of the burner. Results from rough usage only. Have done it and had it done for me. Usually due to too forcible expansion when putting in new tubes. Favors

scorching by allowing the flame to get inside of the burner. E. May not be known until the burner becomes overheated or explosions occur. R. If the crack be not too large you may be able to stop the leak by stuffing it with asbestos, or, if the air pressure be maintained at a high point, the burner will still give some sort of service.

9. Burner walls not packed closely enough to prevent loss of heat or the entrance of outside air. E. With the fire on, light may be seen between the burner and boiler. If you have had the burner out you will know how well it is packed.

10. Yellow or red flame. E. Can be seen; odor while burning; smoke. R. Evident when the cause is known. May be due to dirty burner, poor fuel, steam drawn up into the boiler, wind down the chimney, gasoline leak in the fire box, leak of steam from the boiler, leak of water into the flues from the top, insufficient chimney vent, displaced mixing tube, too large lumen in the gas injector, boiler dry.

11. Water leaking on to the outside of the burner, giving rise to loss of heat by radiation and pollution of the gas by consequent steam, if the steam be drawn into the fire or mixing tube. E. Similar to No. 16 of Engine section, which see.

12. Air blows down the chimney. E. A peculiar fluttering, hissing noise, operative when going with, and at same rate as or slower than, the wind. R. Use the side draft with the covers as described in the Aug., 1901, issue of THE AUTOMOBILE. High air pressure will be of some service.

A Pleasant Run.

A party of prominent automobilists of New York city were guests of Mr. Jefferson Seligman, treasurer of the A. C. A., in a recent run over the good roads of Staten Island, New York. The party was made up of well-known New York society people, and consisted of 35 ladies and gentlemen.

A finer collection of vehicles, both American and foreign, has seldom been seen. Among the vehicles were two 12-HP. Panhards, 8-HP. Panhard, 16-HP. Rochet-Schneider, 12-HP. Mercedes, 16-HP. Mercedes, 20-HP. Gasmobile and an 8-HP. Fournier-Searchmont. The party crossed at Twenty-third St. Ferry to Jersey City, and thence over the Hudson County Boulevard to Bergen Point Ferry to Port Richmond, and on to Tottenville, where luncheon was served. The return run was made by way of the Amboy and Richmond roads to Clifton and St. George and thence by ferry to New York. The trip was completed without delays, except for a few minor tire troubles, and the performance of the American built machines was especially gratifying. In the party were several automobilists from abroad.

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on him the responsibility of looking out for other traffic, he is nearly always the best judge of how other traffic should be passed. In very many cases he can best pass without a warning signal, reserving this latter for use only when the other vehicle must yield part of the road. This is particularly the case when passing a horse vehicle from behind.

When happily we have seen an end of the vicious practice now so common, of going full tilt down the middle of a narrow road, blowing the horn and crowding all other traffic into the ditch, then the horn will be used for its legitimate purpose and nine-tenths of the present hostility toward the automobile will have vanished.

Endurance Contests in the Future.

The surprising jump in the number of blue ribbon awards in the Long Island endurance runs, from 25 per cent. of those qualifying last year to 57 per cent. this year, points strongly to the conclusion that, with the progress that the next twelve months must show, the requirements will need to be made materially more severe next year if the contest is not to be too easy to excite interest. The results of the contest last month were as gratifying as to most people they must have been unexpected, the large number of gasoline machines going through without carbureter or ignition troubles being especially notable. But the contest between the showing this spring on the incomparable roads of Long Island, and the sorry showing made by most of the machines, even those of identical origin, in the New York to Rochester run last fall, cannot fail to impress the public with a belief that, if the conditions of the longer run were sometimes too severe, those of the run last month were to at least an equal degree too light.

There are three ways, weathers aside, in which the conditions might be made more onerous: (a) the length of the run may be increased; (b) the speed may be increased; (c) less perfect roads may be chosen. There are good reasons, chief of which is the fact that nearly the whole of Queens and Nassau counties is dotted with villages, why the Long Island Automobile Club, which stands for self-respecting automobilism on Long Island, should not permit a string of sixty or a hundred automobiles to pass through these villages at speeds which would cause no comment if indulged in by a single machine. On the other hand, a limit of fifteen miles is so much below normal road speed on a good road as to be not only very irksome to the driver, but no test at all of the machine. A gasoline automobile in particular might almost as well be jacked up outdoors and run against a Prony brake for the same length of time. The motive which originally dictated the selection of a route lying en-

tirely within these two counties was to save operators from being too far from a repair shop in case of a break. It may well be asked, however, whether by another year this necessity will not have largely disappeared. If this be granted, there cannot be a better choice of a route than directly east from Jamaica, preferably perhaps along the center of the island and where the towns are not so thick, and return. This would give the machines a taste now and then of dirt roads, and by taking them away from the section which has been harried by automobile scorchers in the past it would render feasible an average speed of 20 miles an hour. If desired, the speed could be reduced through villages, this reduction being enforced either by pacemakers or by timekeepers at each end of each village, and the time thus lost could no doubt be made up on the open roads between. This increase of speed would render feasible an increase in the distance to 125 or even 150 miles without too great a tax on the participants.

Whatever may be done in the direction of a higher speed next year, it will be most essential that the club enforce the speed limit by adequate penalties. The speed limit should be plainly printed on the operators' cards, and a clause added to remove any opportunity for the operator to throw the blame of exceeding this limit on the observer. It would not be a bad plan, too, for the club to suggest to the village constables in advance that it would support them in arresting any driver, whether officially entered in the contest or not, who drove his machine at a reckless pace over the route on that day.

A Protest from the N. A. A. M.

At a meeting held Monday, April 28, the National Association of Automobile Manufacturers sent to the Long Island Automobile Club an emphatic protest against the performance of those contestants in the endurance run who ignored the rules by going over the course at racing speed. The association took the ground that conduct of this sort, by which the scorchers aimed at notoriety rather than awards, was in defiance of the club, and was calculated to make the real winners in the contest appear ridiculous in the public eye. The association urged the club to take vigorous action, both to penalize the offenders in the contest just held and to take adequate measures to prevent a repetition of the trouble. They say:

"Unless the winners of your endurance contests can feel perfect confidence of securing the credit usually given to winners of contests in the public reports of the events, your endurance contests are likely to lose their deserved popularity. So far as our members are concerned, they do not feel inclined to enter any further endurance contests where any contestants

or outsiders are allowed to run over the course among the legitimate competitors while *deliberately* disregarding the fundamental rules of the contest. . . .

In your future endurance contests it would seem essential to the interests of the legitimate competitors that you should have such control over the course or parts thereof as to enable you to forcibly prevent notoriety-seekers from intentionally damaging the value of your awards, as was done last Saturday."

The question of a uniform guarantee was discussed with a view to agreeing on a standard guarantee for American machines. Steps were taken looking to the compilation of a directory of repair shops and supply stations. The date of the next Chicago show was also fixed for Feb. 23, 1903, bringing the Chicago show two weeks after the close of the New York show.

The table of awards on page 133 has not been finally certified to, and may contain errors which will be corrected in our next issue. No award has yet been made in the gasoline consumption contest, the data regarding this being found to require considerable checking. Under the head of "causes of stops" are given all the penalized stops of the machines which qualified for awards. Although tire punctures did not come in this class, it is worthy of note that very few stops were made for this cause.

The Automobile Industry in France.

It is estimated, according to Mr. Thornwell Haynes, United States Consul at Rouen, France, that outside of coal mining and the larger metallurgical industries, automobilism maintains more people in France than any other industry. The factories have trebled their output during the past three years, and manufacturers formerly making bicycles now turn out automobiles. Paris was at one time the only city where automobiles were made, but now Lyons, Bordeaux, Marseilles, Nantes and Rouen have factories where local trade is supplied.

As an illustration of the growth of the motor industry, it is stated by Mr. A. P. Inglis, the British Consul-General, that the race which was run last year between Paris and Berlin brought orders to French firms valued at 108,000,000 francs.

A cable dispatch to the "New York Herald" reports a sensational automobile run by W. K. Vanderbilt, Jr., on April 20, over a 23-kilometre stretch on the Abba-Chartres route. Driving his new 40-HP. Mercedes, he covered the distance in 16 minutes, an average speed of about 68 miles an hour for a little over 18 miles. This, while not quite the fastest speed on record for shorter distances, is faster than any previous time for an equal distance.

Correspondence.

Space will be given on this page to letters concerning the Automobile, its operation or construction, to accounts of tours or runs, routes of travel, good roads, etc. When requested by correspondents their names will not be published, but must always be given in the communication to the Editor.

A Correction and a Comment.

Editor THE AUTOMOBILE:

In the excellent number of your paper for the current month I notice two items on steam vehicles to which I take exception. On p. 74 in the description of the White carriage, the action of the automatic bypass valve on feed pipe is given exactly opposite to the fact. The writer evidently followed common boiler experience, without stopping to think of the opposite action of the flash generator. As a matter of fact, the White bypass is closed by a spring, and pushed open by rising steam pressure in the generator. In this system, a large amount of feed water produces high steam pressure, "and lots of it;" while a stoppage of water causes quick loss of steam. It, therefore, produces the result, so surprising to the operator accustomed to the common form of boiler, that the faster he runs (thereby pumping water faster) the more steam he has!

The other point is on p. 68, in the article by Walter L. Bodman. This article as a whole I admire and commend heartily (that sounds rather patronizing, but I don't intend to set myself up as a superior authority), but I think Mr. Bodman is over-much influenced by his steam truck practice when he advocates placing the boiler in front of the seat. I fear it would be impossible to so dispose of the heat and fumes as to make that arrangement satisfactory in a pleasure vehicle. If these could be overcome, there seems to be no other objection to his ideas, and with that one exception it strikes me that his article points the way, and the only way, by which the builders of steam pleasure vehicles may prevent themselves being driven entirely out of the market in a very short time. I do not think that a man who has ridden in a "French style" car will ever be quite content afterward to drive a rig from a high seat, with his feet directly over the front axle.

March 14, 1902.

R. W. B.

A Pennsylvania Tour.

Editor THE AUTOMOBILE:

On March 28th we left Philadelphia for a 200-mile run under the most trying conditions imaginable. It was raining hard when we made the start with a brand new Model 3 Fournier-Searchmont touring car. The machine had not been finished 15 minutes before we had it, so consequently it needed some few adjustments on the way—however, but few. The car is the property of F. A. Godcharles, of Milton,

Pa., whither we were bound. Mr. Godcharles was determined to have the tour, and asked me to do the chauffeuring, which I did. Having had some experience a few years back with some of the different makes of carriages, I had but little difficulty in the operation of this particular one, although I knew nothing whatever of its actions before starting. The heavy rains caused the roadways to be something not to be much desired. We left the city at 3.45 p. m., headed for Pottstown, to stop for the night, which place we reached at 7.10 p. m., a distance of 46 miles. Except for the rain in our faces, nothing of note happened thus far. The following morning we arose, only to find it still raining hard; but as we both were anxious to get home, we started for Reading. The road, although a pike, was very slippery, causing the auto to skid badly at times, and we not infrequently found ourselves crosswise in the road. This necessitated slow running in a place where we should have made time if it was to be made any place on the trip. We reached Reading for lunch, met a few friends, filled the tanks, got oil supply, and at 2 p. m. started for Harrisburg. On leaving Reading we noticed our engines did not seem to be working very satisfactorily and concluded to make an examination, but not until we reached the top of the hill east of the city, which we did. The examination showed that one electric spark plug was disconnected, so that we had made the grade with but one engine. We had just run on a pair of Fairbank scales and weighed the load; it weighed exactly 2,182 pounds. We did not worry thereafter about having sufficient power for our hilly country. The next little break was the water circulating pump connection, which we repaired easily enough with a piece of rubber hose we carried. We got considerable mud and rain all over us outside and down our backs doing this. We arrived in the city of Harrisburg on Sunday, facing the most severe rain and windstorm I was ever called to experience, straight in our faces. Here we left the pike for something fiercer in the road line, if they may be public highways at all. The high waters during the winter and spring simply made them almost impassable for horse-drawn vehicles, but we were in it and must get out. The ascent to the mountain north of the city was not so terrible. By using newspapers to get traction, we managed this fairly well, but the descent was something to make your hair stand on end—something like meeting a bear. There were washouts, stones, rubbish of all sorts and swampy places here, but at last we reached the bottom somehow, with only a body loop broken. I say only, because it is but the work of a few minutes to repair such a small thing as that when the blacksmith is sitting around waiting for you; but out here in the mud and no house in sight for several miles, it is different. However, we made

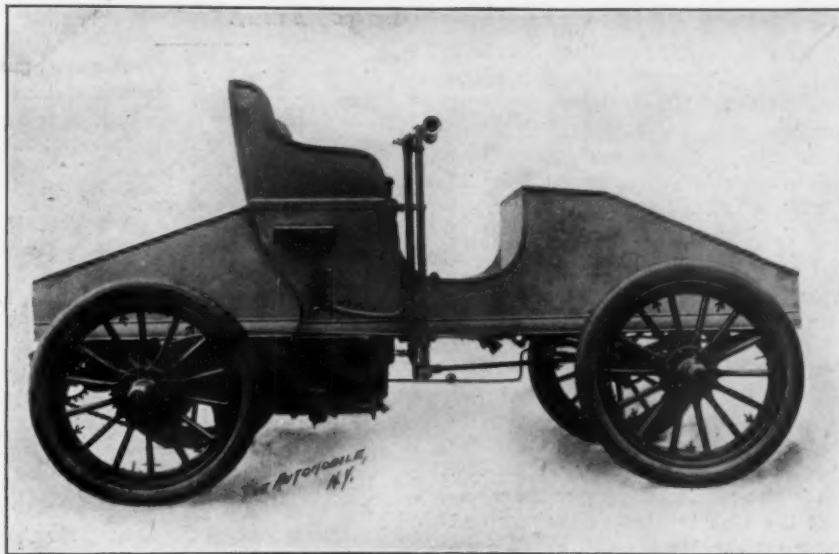
a fix with wood, wire and strings of all sorts, and made a plunge for something a lot more discouraging to a new beginner in the auto line, as was Mr. Godcharles. We went straight down in the mire 18 inches deep and sticky than tire cement in July. Here was a dilemma! We consulted each other awhile, then the machine, and found the more we consulted the latter the deeper down it went. Next we concluded a few 20-foot planks would be better. These we found, some on the fence, some in the river and some on the bank. Six of these did the work when placed just right, so we raised the 2,182 actual but 6,000 (imagined) pounds to the top of the plank with pries and a small jack we had the forethought to purchase while in the city, and taking it slowly to the end we carried four forward, and so on for 350 yards, until we could get solid footing; here, by using more newspaper, we were able to pull through. Next came the long bridge crossing the Susquehanna river at Clark Ferry. The entrance was barricaded and we ascertained it was unsafe, especially during heavy wind. This we had, and snow mixed with it now; but after some debating we determined risking it rather than turn back and go through again what we had just completed—the planking process. One-half of the floor had been torn out, and this made a very narrow road for fast running. We each took a long breath and held it until we were safely over, but the bridge certainly did sway to and fro in the strong wind. Nothing more of importance happened the balance of 50 miles, except scary horses and slow running, as the entire distance was run on slow speed from Harrisburg to Milton. I said nothing of importance. However, two more body loops broke from the rough roads and some strain from the break of the first. We ran out of gasoline once, and ran back a mile and a half after enough to take us to the next town, but this didn't count. Well, on the whole, the trip was very successful, considering the condition of the roads we traveled over and all, and we are more than pleased with the way the Fournier-Searchmont did its work and the condition it was in after doing it. I think the ideas of some people will change as to the automobile being of no earthly use in stormy weather, snow, mud, etc.

E. E. RITTER.

At the Crystal Palace Show, London, it is estimated that over \$1,000,000 worth of orders for automobiles were placed. American made machines received recognition, and it is especially gratifying that among the orders placed was one by the Marquis of Salisbury, who has become interested in the automobile movement, for a "Locomobile." The Locomobile Company of America has just received advices from its London office confirming the reported sale.

The Victor 14-HP. Steam Touring Car.

The machine shown in the illustration on this page is the first of its type to be turned out by the Overman Automobile Company. It was finished too late to be started in the Long Island Endurance Test, in which it was entered as No. 12. It has an 84-inch wheel base, with reachless running gear and angle iron frame. It weighs 2,325 pounds empty, and about 3,000 pounds with all supplies on board. A detachable tonneau is supplied, for



THE VICTOR 14-HP. TOURING CAR.

which a rumble seat or touring box may be substituted. The engine is horizontal, with two cylinders of $3\frac{1}{4}$ bore by 6 inch stroke. It runs at a maximum speed of 500 R. P. M. and cuts off normally at one-third stroke. It reverses by link motion. The boiler is of the usual type, but of unusual size, being 23 inches in diameter and 18 inches deep, with 756 half-inch tubes. A Forgy burner is used, and a steam air pump maintains the air pressure. Power is transmitted to the rear wheels by independent chains from the countershaft, and the brakes likewise act on the wheels. There are three gasoline tanks with a total capacity of 26 gallons, located in the forward part of the body. All bearings in the engine, transmission, and wheels, are plain. The equipment includes a steam siphon to fill the water tank, which has a capacity of 60 gallons; also a jet condenser and air separator so that the water is used over again.

The Balzer Motor.

The motor which is shown in the accompanying illustration is the invention of Stephen M. Balzer, and has been in process of development for several years. Its special feature is that, instead of the body of the motor being fixed and the crank shaft revolving within it, the shaft is fixed and the cylinders, five in number, with the crank case, revolve around the

shaft. The object of the arrangement is to dispense with the weight of the flywheel and with water circulation for cooling, the momentum of the cylinders themselves taking the place of the former, and their rapid motion through the air, assisted by radiating flanges, performing the work of the latter.

The crank shaft has a single crankpin on which all five of the pistons work, and the crankpin brass of each connecting rod, instead of enclosing the crankpin, encircles somewhat less than one-fifth of it

and the five brasses are retained on the pin by a pair of split steel rings encircling them all. The pistons have socket joints for the small ends of the connecting rods, instead of the usual piston pins, and most of the surface of the pistons is taken up



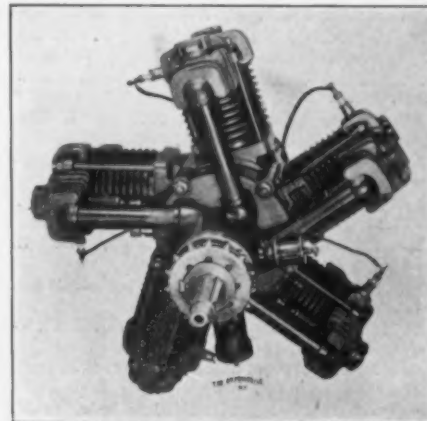
THE NEW CHARRON, GIRARDOT & VOIGT CAR.

with packing rings. The axes of the cylinders, instead of passing through the centre of the shaft, are offset as the photograph shows, and this construction, by giving the piston a more direct thrust on the crank pin at the beginning of the stroke, is claimed to add very greatly to the available power.

The crankcase has a bearing at each end of the shaft, and on each bearing a sleeve connection also, one for the fresh

mixture and the other to carry away the exhaust gases. Both inlet and exhaust valves, one on each side, are operated by cams. Ignition is by jump spark, with a distributor or commutator, revolving with the cylinders, giving current to each in turn.

The motor shown has cylinder dimensions of $3\frac{1}{2}$ by $3\frac{1}{2}$ inches, and is stated to



THE BALZER MOTOR.

weigh 300 pounds and to give 10 B. H. P. at 500 R. P. M. The motor is in practically perfect balance and may be run at any speed with no sensible vibration. Lubrication is effected by means of feed cups. This motor is built by the Balzer Motor Co., 370 Girard Ave., New York.

Alexander Fischer, 239 West 50th Street, New York, states that he has arranged to take the American agency for the Rochet-Schneider gasoline cars.

On Thursday, April 24, Mr. J. S. Bunting, manager of John Wanamaker's automobile stores, drove his Fournier-Search-

mont car from Philadelphia to New York by way of Princeton in 6 hours 25 minutes running time. On Friday he made an inspection tour of the endurance run course, and on Saturday he drove one of the disqualified cars. He returned to Philadelphia on Sunday by the same route in the net running time in 6 hours 5 minutes. Total, 482 miles by odometer in four days. Four passengers were carried all the way.

CLUB NEWS AND VIEWS

Club Directory.

Albany Automobile Club, F. G. Robinson, Secy., 422 Broadway, Albany, N. Y.
 Automobile Club of America, S. M. Butler, Secy., 753 Fifth Ave., New York.
 Automobile Club of Baltimore, W. W. Donaldson, Secy., 872 Park Ave., Baltimore, Md.
 Automobile Club of Bridgeport, F. W. Bolande, Secy., 49 Cannon St., Bridgeport, Conn.
 Automobile Club of California, A. C. Aiken, Secy., San Francisco, Cal.
 Automobile Club of Cincinnati, R. H. Cox, Secy., Cincinnati, O.
 Automobile Club of Columbus, C. M. Chittenden, Secy., Broad St., Columbus, O.
 Automobile Club of Illinois, M. Scott, Secy., 1251 Marquette Bldg., Chicago.
 Automobile Club of Hartford, W. G. Cowies, Secy., Hartford, Conn.
 Automobile Club of Maine, Henry M. Jones, Secy., Portland, Me.
 Automobile Club of New Jersey, W. J. Stewart, Secy., S Central Ave., Newark, N. J.
 Automobile Club of Rochester, Fredk. Sager, Secy., 66 East Ave., Rochester, N. Y.
 Automobile Club of Syracuse, Frederick H. Elliott, Secy., 515 S. A. & K. Building, Syracuse, N. Y.
 Automobile Club of Utica, Jas. S. Holmes, Jr., Secy., Huron Building, Utica, N. Y.
 Brockton Automobile Club, H. S. Keith, Secy., Brockton, Mass.
 Bloomsburg Automobile Club, C. W. Funston, Secy., Bloomsburg, Pa.
 Buffalo Automobile Club, Ellicott Evans, Secy., Lenox Hotel, Buffalo, N. Y.
 Chicago Automobile Club, H. M. Brinkerhoff, Secy., Monadnock Block, Chicago.
 Cleveland Automobile Club, Windsor T. White, Secy., Cleveland, O.
 Columbia College Automobile Club, Lewis Icelin, Secy., Columbia College, N. Y.
 Dayton Automobile Club, E. Frank Platt, Secy., Dayton, O.
 Grand Rapids Automobile Club, Grand Rapids, Mich.
 Herkimer Automobile Club, W. I. Taber, Cor. Secy., Herkimer, N. Y.
 Houston Automobile Club, Mrs. L. M. Adams, Secy., Binz Bldg., Houston, Tex.
 Hudson County Automobile Club, F. Eveland, Secy., Jersey City, N. J.
 Indiana Automobile Club, August Habich, Secy., Indianapolis, Ind.
 Iowa Automobile Club, W. B. McNutt, Secy., Des Moines, Ia.
 Long Island Automobile Club, L. A. Hopkins, Secy., 1190 Fulton St., Brooklyn.
 Massachusetts Automobile Club, F. L. D. Rust, Secy., Boylston St., near Exeter, Boston.
 National Capital Automobile Club, W. J. Foss, Secy., 819 14th St., N. W., Washington, D. C.
 New Bedford Automobile Club, E. G. Watson, Secy., New Bedford, Mass.
 North Jersey Automobile Club, E. T. Bell, Jr., Secy., Paterson, N. J.
 Pennsylvania Automobile Club, H. J. Johnson, Secy., 138 N. Broad St., Philadelphia, Pa.
 Philadelphia Automobile Club, Frank C. Lewin, Secy., Hotel Flanders, Phila., Pa.
 Princeton University Automobile Club, Chas. H. Dugro, Secy., Princeton, N. J.
 Rhode Island Automobile Club, F. A. Fletcher, Secy., 42 So. Water St., Providence.
 San Francisco Automobile Club, B. L. Ryder, Secy., San Francisco, Cal.
 Scranton Automobile Club, J. H. Brooks, Secy., Scranton, Pa.
 Springfield Automobile Club, Stephen P. Perkins, Secy., Springfield, Mass.
 St. Louis Automobile Club, John Ring, Secy., St. Louis, Mo.
 Troy Automobile Club, J. S. Thiel, Secy., Troy, N. Y.
 Worcester Automobile Club, H. E. Shelland, Secy., Worcester, Mass.

Automobile Club of America.

The president of the club, Mr. Albert R. Shattuck, sent out a circular letter last month addressed to the members. In this letter Mr. Shattuck calls attention to the fact that because of the inconsiderate driving of automobiles practiced by a few owners of vehicles there were at the last session of the Legislature several bills introduced limiting the rate of speed and providing very drastic penalties. The Law Committee and officers of the club made several trips to Albany to oppose and modify the proposed legislation. They were in a large measure successful, and the law as it now stands in the State of New York is in the main satisfactory. At present the law limits the speed to eight miles an hour in cities, but Mr. Shattuck states that it is the intention of the club to endeavor to have the speed limit raised in the unbuilt up portions of Greater New York. The Cocks bill provides that local authorities in cities may increase the speed above eight miles per hour, but at present this rate of speed should not be exceeded in the city of New York. Mr. Shattuck also particularly urges the members of the club to observe the law and to use great consideration in passing vehicles or foot passengers on the highway.

It is to be remembered that the rights of the road should be enjoyed in common by all; that the owner of an automobile has no more right than any other citizen; that he should be considerate of the rights of others, and that he render every assistance possible to persons who may be driving frightened horses. President Shattuck also calls attention to the fact that some members of the club have made it a practice when residing in the country to send their automobiles to the nearby town or village every morning and carefully run around the public square, so that owners of horses might have them accustomed to the sight of and to the noise made by the machines. Where this has been done it has been appreciated by horse drivers, and it tends to promote a feeling of friendship rather than antagonism towards the automobile. By being careful and considerate of the rights of others, the feeling which has been engendered against the automobile can, he believes, be overcome.

The Hartford Automobile Club, Hartford, Conn., was organized last month. The president is Leonard D. Fish; vice-president, Dr. M. M. Johnson; secretary, Walter G. Cowles; treasurer, Geo. M. Brown.

Mr. F. C. Donald, of the Chicago Automobile Club, is chairman of the Membership Committee of the American Automobile Association.

Lakewood, N. J., has become a popular resort for automobilists in winter. A number of well-known members of the Automobile Club of America, and the Philadelphia and Boston Automobile Clubs, have centered at this point. The resort is the center of an extensive system of excellent roads. Parties of touring automobilists arrive from New York and other points daily.

Mr. Rollin H. White, Cleveland, O., gave a lecture at the club rooms of the Long Island Automobile Club in Brooklyn March 12 on the flash type of steam boiler. In the course of his lecture Mr. White said that with 15 or 20 per cent of alcohol in the water the danger of freezing was practically overcome.

National Good Roads Convention.

Charlottesville, Va., April 2d, 3d, 4th, 1902.

The Good Roads Convention, held at Charlottesville on the above dates, under the auspices of the National Good Roads Association, the United States Office of Public Inquiry and the Jefferson Memorial Road Association, was significant as evidencing the rapidly growing recognition of the good roads movement throughout the country. The Charlottesville convention marked the end of the tour of the Southern Railway "Good Roads Train," which left Washington last October, carrying road building machinery and road experts, and made official stops at the following places:

Winston-Salem and Asheville, in North Carolina; Greenville and Chattanooga, Tenn.; Birmingham, Montgomery and Mobile, Ala.; Atlanta, Columbus and Augusta, Ga.; Greenville, Columbia and Charleston, S. C.; Raleigh, N. C.; Danville, Richmond, Lynchburg and Charlottesville, Va.

Conventions were held at all these places, state and county good roads associations formed and a sample of good road constructed at each place. The train covered some 5,000 miles, congregated over 50,000 people and constructed about 34 miles of sample road.

Charlottesville men of national reputation addressed audiences of two or three thousand people throughout the greater part of three days, and nearly a mile of road was constructed of what is to be known, when it is completed, as the Jefferson Memorial Road, running from Charlottesville about three miles to Monticello, the home and tomb of Thomas Jefferson. On two successive days special trains from Washington over the Southern Railway brought a large number of Senators and Congressmen to attend the convention. Gen. Fitzhugh Lee, the president of the Jefferson Memorial Road Association, presided.

Constitution and By-Laws of the A. A. A.

ARTICLE I.—NAME.

This association shall be known as "The American Automobile Association."

ARTICLE II.—CLUB SEAL.

The seal shall be circular with the words, "The American Automobile Association" inscribed thereon.

ARTICLE III.—OBJECTS.

Section 1. The promotion of a national organization of clubs composed in whole or in part of persons owning self-propelling pleasure vehicles for personal or private use. To co-operate in securing rational legislation and the formation of proper rules and regulations governing the use of automobiles in the city and country, and to protect the interests of owners and users of automobiles against unjust or unreasonable legislation, and to maintain the lawful rights and privileges of owners or users of all forms of self-propelled pleasure vehicles whenever and wherever such rights and privileges are menaced. The encouragement and development in this country of the automobile. To promote and encourage in all ways the construction and maintenance of good roads and the improvement of existing highways, and generally to maintain a national organization devoted to automobilism.

Sec. 2. The American Automobile Association shall be essentially an association of clubs supported by the clubs of the association and not carried on for profit.

ARTICLE IV.—MEMBERSHIP.

Section 1. American automobile clubs exclusively devoted to automobiling shall alone be eligible for membership.

ARTICLE V.—GOVERNMENT.

Section 1. The officers of this association shall consist of a President, a First, Second and Third Vice-President, Secretary and Treasurer.

Sec. 2. The general management and control of the affairs, funds and property of the association shall be vested in a Board of seven Directors, exclusive of the President, First Vice-President and Treasurer, who shall ex-officio be members of said Board.

ARTICLE VI.—BASIS OF REPRESENTATION.

Section 1. Each club shall be represented by one or more delegates who shall be entitled to one vote for each active, associate and life member of the club represented, but no club may be represented by proxy.

ARTICLE VII.—AMENDMENT.

Section 1. The constitution may be amended only by a vote of two-thirds of the voting power represented at a regular or special meeting called for that purpose.

Sec. 2. No proposition to amend this constitution shall be acted upon at any meeting of the association unless it shall have been presented in writing to the Secretary, signed by at least five clubs through their properly constituted officials and notice embodying the purport of the proposed amendment shall have been sent to each club in the association in the call for such meeting, which notice shall be sent at least thirty days prior to the date of the proposed meeting.

BY-LAWS.

CHAPTER I.

Section 1. The general management and control of the affairs, funds and property, of the association shall be invested in a Board of seven directors, exclusive of the President, First Vice-President and Treasurer, who shall ex-officio be members of said board.

CHAPTER II.

Section 1. The annual meetings of the association shall be held alternately in the East and West at such times and places as the Board of Directors may designate. Notice of the time and place of holding same shall be sent to each club at least thirty days prior thereto.

Sec. 2. Meetings other than the annual meeting may be called by the Board of Directors, and a notice of the time and place of holding such meeting must be sent to each club at least fifteen days prior thereto. The Board of Directors must call a special meeting of the association when so requested in writing and signed by at least five clubs specifying the object for which the meeting is to be called, and no other business shall be considered at such time.

Sec. 3. At all meetings of the association five clubs shall constitute a quorum.

Sec. 4. If a quorum shall not be present the presiding officer may adjourn the meeting to a day and hour fixed by him, with the same effect as if held as above provided.

Sec. 5. At all regular meetings the order of business, except when otherwise determined by a vote of those present, shall be

- 1st. Reading and correction of the minutes;
- 2d. Report of officers;
- 3d. Report of committees;
- 4th. Elections;
- 5th. Unfinished business;
- 6th. General business.

Sec. 6. Stated meetings of the Board of Directors shall be held on the first Tuesday of each month at 4 p. m. at the headquarters of the Association in the City of New York. Special meetings of the Board of Directors may be called by the presiding officer thereof, and shall be called by him on the written request of any three members of the board.

Sec. 7. Four members of the Board of Directors shall constitute a quorum.

CHAPTER III.—ELECTIONS.

Section 1. The officers and directors shall be elected at the annual meeting of the association. The election shall be by vote on the basis provided for in Article VI., Sec. 1. of the Constitution; provided the clubs voting shall not be in arrears for annual dues or for assessments.

Sec. 2. Nominations of officers and directors must be made by the Board of Directors and the notice of such nominations mailed to the clubs at least thirty days prior to the annual meeting. Nominations for such officers and directors may also be made by any club in good standing, at the time of the meeting for the election.

Sec. 3. The officers shall hold office until their successors are duly elected and qualified.

CHAPTER IV.—VACANCIES.

Section 1. If a vacancy shall occur in any office or in the Board of Directors, such vacancy may be filled by a majority vote at a meeting of the Board of Directors, and the term of such officer or director shall expire on the election and qualification of his successor at the next annual meeting.

CHAPTER V.—DUTIES AND POWERS OF THE BOARD OF DIRECTORS.

Section 1. The Board of Directors shall appoint such committees as they may deem necessary for the conduct of the affairs of the association.

Sec. 2. The Board of Directors shall

(a) Keep minutes of their proceedings and transmit a copy of such minutes to each member of the association.

(b) Cause the annual report of the Treasurer, duly audited as hereinafter provided, to be promptly sent to each member of the association.

Sec. 3. The Board of Directors shall have powers

(a) To fix the penalties for violation of rules or for conduct of any member detrimental to the welfare of the association, and to enforce same.

(b) To remit penalties for offenses against the rules and for accidental violation of the Constitution or By-laws.

(c) To elect members as hereinafter provided.

(d) To make rules for their own government and for the government of the committees appointed by them, except as may herein be otherwise provided.

(e) To perform all other duties as may devolve upon them in their official capacity.

CHAPTER VI.—DUTIES OF THE PRESIDENT, AND VICE-PRESIDENT.

Section 1. The President shall preside at all meetings of the association and of the Board of Directors.

Sec. 2. The First Vice-President shall assist the President in discharging his duties, and in his absence shall succeed to the functions and perform the duties which would devolve upon the President, if present.

Sec. 3. In the absence of the President or First Vice-President, the Board of Directors shall elect one of their number, who shall succeed to the functions and perform the duties which would devolve upon said officers, if present.

Sec. 4. The President may call special meetings of the Board of Directors at any time in his discretion.

CHAPTER VII.—DUTIES OF SECRETARY.

The Secretary shall notify each club elect of its election, and upon membership being perfected shall report its name to the Treasurer with the date of its election. He shall notify each club of meetings of the association. He shall keep a correct list of the members, of their election or re-election. He shall keep a true record of all proceedings at meetings of the association, with the names of the delegates and of the clubs represented, in a book provided for the purpose. He shall perform such other duties as may be enjoined upon him by the by-laws or by the Board of Directors. He shall be paid such salary for his services as shall be fixed by the Board of Directors.

CHAPTER VIII.—DUTIES OF TREASURER.

Section 1. The Treasurer shall receive all moneys of the association and deposit same in the name of the association in such bank or trust company as shall be approved by the Board of Directors, and under the direction of the directors shall disburse the funds of the association.

Sec. 2. He shall keep regular accounts and submit same to the Board of Directors whenever so required. He shall prepare and submit at the annual meeting a statement in writing, showing the financial condition of the association. He shall be bonded in such amount as may be determined by the Board of Directors.

CHAPTER IX.—ENTRANCE FEE AND DUES.

Section 1. The entrance fee shall be \$10 per club, to accompany application for membership. The dues shall be \$3 per capita as of January the 1st, per annum, for each active, associate and life member; such dues to be payable semi-annually in advance on January 1st and July 1st of each year. Any member whose yearly dues or assessments shall remain unpaid for thirty days after they shall have become due, or shall have been imposed, shall be notified by the Secretary that unless such arrears shall be paid within fifteen days thereafter, their membership shall be terminated.

Sec. 2. By a vote of three-fourths of the members represented at a regular or special meeting, the association may levy one or more assessments upon each club; such extra assessments not to exceed \$2 per capita in any one year, provided that notice of such proposed action shall have been given in the call for the meeting.

CHAPTER X.—CLUB CERTIFICATE.

The Board of Directors shall adopt and provide a certificate of membership in this association which shall be furnished to each member thereof.

CHAPTER XI.—NOTICES.

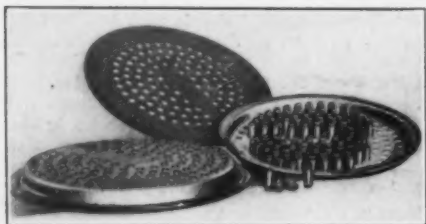
All notices required to be sent to any club shall be sent by mail prepaid to such club's Secretary and such mailing will be presumptive evidence of the service thereof. Any change in the address must be promptly sent to the Secretary who shall report the same to the association.

CHAPTER XII.—AMENDMENTS.

These by-laws may be amended only by a two-thirds vote of the voting power represented at a regular or special meeting of the association, the purport of the proposed amendments having been stated in the call for the meeting.

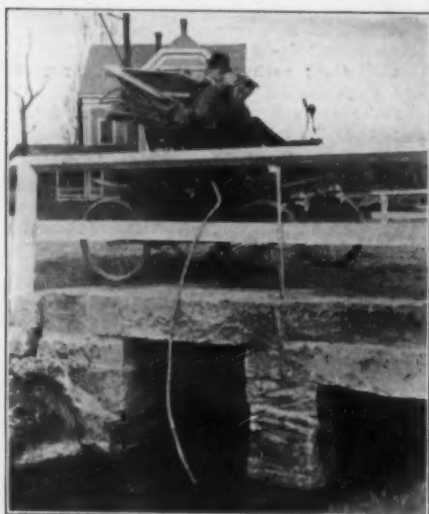
Presswork Applied to Steam Carriage Burners.

A recent number of the "American Machinist" contained an interesting description of the process of making the burners used by the Locomobile Company of America, by J. L. Lucas. The construction of the burner is shown in the illustration, which shows the top and bottom plates separately, the former being inverted and having some of the air tubes riveted into it. The plates are punched and the top plate is drawn up or dished to the depth of 1 inch, and then flanged for riveting to the bottom of the plate. Each of the air tubes prepared has over it a spacing tube 1 inch long, to give the distance between the two plates. After the tubes and spacers are assembled together, the tubes are riveted into one of the plates of the burner, usually the top one, as shown. The bottom plate is then put on and the tubes closed over, making each in effect a tubular rivet. Not only the holes for the air tubes, but the pinholes for the gas jets are punched, and as the plate is .08 of an inch thick, and the holes are only .05 of an inch in diameter, it will be seen that this is not an easy job. The



LOCOMOBILE BURNER.

task is accomplished by the use of a tool containing as many small punches (about 20) as there are holes around a single air tube, and punching all these holes together for each air tube hole. The punches are made from wire .10 of an inch in diameter, reduced to .05 inch for 1-16 of the length, and then hardened and drawn to a purple. When a punch wire breaks a new one is inserted.



A GROUT CARRIAGE TAKING WATER.

By this construction a very rigid burner is obtained, with riveted joint away from the flame and great natural stiffness in the top plate. The tubes also are made by this construction to contribute their full quota to the stiffening of the plate, so that with intelligent treatment the burner is practically indestructible.

Chas. M. Schwab, president of the United States Steel Corporation, drove his automobile from Philadelphia to Atlantic City, about seventy miles, in one hour and forty-eight minutes, on Monday, April 19. As a result of his failing to slow down properly when passing through built-up sections, the villagers along the way were aroused to such a pitch of indignation that it will be some time before drivers of fast machines, and Mr. Schwab in particular, will be safe to venture on this road again.

Two Dow Specialties.

A very convenient pocket ammeter, about the size of an ordinary watch, is shown in the accompanying illustration and is intended for use

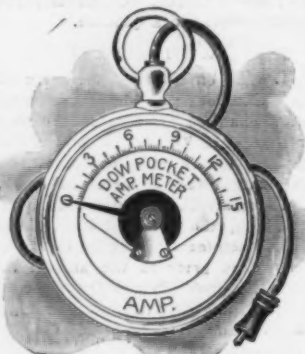


FIG. 1. DOW AMMETER.

in testing the strength of ignition batteries. It registers up to 15 amperes, and is sufficiently accurate for any purpose of the motor vehicle user, besides being quite inexpensive.

The makers of this instrument, the Dow Portable Electric Co., 218 Tremont St., Boston, make also many types of coils for ignition purposes,



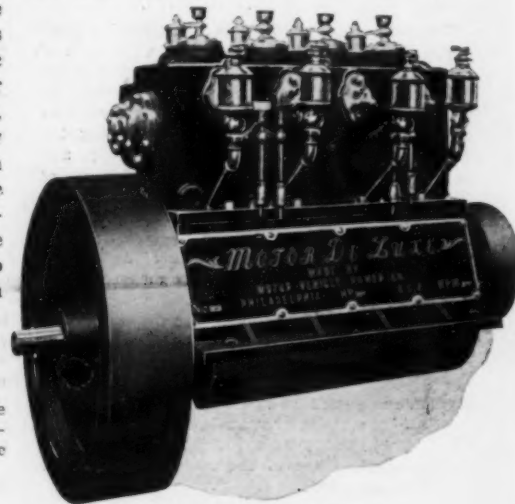
FIG. 2. DOW COIL.

one of which is shown in Fig. 2. This coil is made to bolt into the engine at any convenient point, and it has a detachable key on the top of the coil which can be taken out in a moment, doing away with the necessity for an extra switch between the secondary coil and the spark plug.

The "Motor de Luxe."

The accompanying cut shows the new type of 4-cylinder gasoline motor which is being marketed by the Motor Vehicle Power Co., Philadelphia, in place of their former type with chain-driven igniter shaft on top of the cylinders. The new engine has a shaft, located similarly to the

cam shaft, but on the other side of the engine, which carries four eccentrics which operate the four igniters. By means of a spiral groove in the sleeve, which drives this shaft, the shaft may be rotated through a fraction of a turn, with reference to the gear which drives it, and thus the lead of the spark be advanced or reduced. This arrangement obviates the trouble experienced with the former engine through stretching of the chain and consequent alteration of the spark time.



THE MOTOR DE LUXE.

The new motor is at present built in two sizes, the one shown, rated at 8 HP., and another with but two cylinders, and rated at 3 HP. The normal speed of the former is 450 turns per minute and that of the latter 600 turns. The makers state that by applying jump-spark ignition it is possible to increase the speed of the engines very considerably, up to 1,000 or 1,200 revolutions per minute.

Business News.

Mr. J. P. Forbes has been elected president of the Beardsley & Hubbs Co., Shelby, O.

Grout Bros., Orange, Mass., have opened a Boston office at Harvard Station, No. 1 Columbus Ave.

The Westchester Automobile Co., 523 Fifth Ave., New York, has the agency for Grout Bros., Orange, Mass.

The Ajax Motor Vehicle Co., 220 West 36th St., New York, has issued a catalogue descriptive of its electric runabout.

Kenneth A. Skinner, United States agent for De Dion-Bouton & Co., has removed from 61 to 41 Stanhope St., Boston.

J. A. Newhouse and Robert Miller have opened the Empire Automobile & Storage Station at 132 West 49th St., New York City.

The Steamobile Company of America, has appointed F. W. Wilkinson & Co., Manchester, agents for the Steamobile in England.

H. B. Shattuck & Sons, Boston, report that they have already sold six carloads of Oldsmobiles in their New England territory this season.

Mr. Harry Fosdick, agent for the Winton motor carriage, reports sales for the Boston office of twenty-five vehicles during the past month.

The Fournier-Searchmont Automobile Co. has just issued a catalogue illustrating and describing the different types of automobile of its manufacture.

The Remington Automobile Catechism is the title of a little pamphlet just issued by A. Elliott Ranney, agent for the Remington automobile for New York city and Long Island.

The Worcester Automobile Co. was recently organized to operate an automobile livery at Worcester, Mass. The company has installed a number of Knox gasoline machines.

The Niagara Falls Automobile Co. has been incorporated at Wilson, N. Y. Geo. J. Jackson, Harry Highland, Niagara Falls, and Stahley Dwight, of Wilson, are the organizers.

The Dunkirk Mobile Transit Co. has been incorporated at Dunkirk, Ind. The capital is \$10,000, and it is proposed to operate a line of motor vehicles between that town and Redkey.

The Cedarburgh & Milwaukee Mobile Co. has been organized to operate automobile stages over the route between these cities. The capital is \$10,000, and two 12-HP. stages are ordered.

Thos. B. Jeffery & Co., Kenosha, Wis., recently issued a neat and attractive catalogue illustrating and describing the Rambler gasoline automobile, which it has recently placed on the market.

The Kunz Automobile & Motor Co. has been incorporated at Milwaukee, Wis., with a capital stock of \$25,000. Meyer Rosenheimer, David Rosenheimer and Gustav C. Horer are the organizers.

The International Motor Car Co., Toledo, has recently brought out a handsomely designed and executed lithograph by Henry Hutt, of New York, advertising the Waverley electric runabout.

Phineas Jones & Co., Newark, N. J., report that they are compelled to run their factory to its fullest capacity in order to supply automobile manufacturers with wheels, a specialty which they make.

The Buffalo Automobile & Auto-Bi Co. has issued a catalogue containing illustrations and descriptions of its motor bicycles, tricycles, automobiles and auto quads. Copies may be had for the asking.

The India Rubber Co., Akron, O., has made a set of solid tires which they claim are the largest yet made for automobile use. They state that they have in construction a set of 6-inch tires which will shortly be finished.

The Automobile Exchange & Storage Co., 135 West 38th St., New York City, recently elected new officers as follows: President, M. V. Dawney; Treasurer, W. H. Gardner; Secretary, C. K. McLaren; Manager, Thos. Sinnott.

The D. M. Stewart Mfg. Co., Chattanooga, Tenn., is putting on the market an article called "Stainoff," which is especially useful to automobilists for cleaning the hands after handling the mechanism of their machines.

"The Toledo Steam Carriage" is the title of a special catalogue recently issued by the International Motor Car Co., Toledo. The pamphlet is well illustrated with good cuts. It is well worth sending for by everyone interested.

Padelford & Bell announce that they will occupy the premises at 250 West 80th St., New York City, as an automobile garage. Facilities for care and storage are to be provided, with a machine shop equipped for the repair of motor vehicles.

The Geneva Automobile Mfg. Co., Geneva, O., has issued a new catalogue descriptive of its different styles of steam carriages, including its surrey, runabout, dos-a-dos, and touring car. It is printed in green and black, and its engravings are excellent.

The Waverley Department of the International Motor Car Co., Indianapolis, has issued a little pamphlet containing a list of automobile charging stations in and around New York city, together with a few testimonials from owners of Waverley electric vehicles.

The International Motor Car Co., Toledo, O., has issued the first number of a monthly house organ entitled "The International Motor Car," designed for advertising its vehicles. It is neat and attractive in appearance and well serves the purpose for which it is designed.

The Sydney B. Bowman Automobile Co. has removed from 56th St. and Eighth Ave. to 52 West 43d St., where it will occupy a number of floors and will have greatly increased facilities for carrying on its business. The first floor will be occupied as a sales and storage room.

The Sanitary Road Machine Co. of America has been incorporated in Maine for the purpose of making and selling automobile fire engines and street watering machines. The capital is \$500,000, and the president is C. N. Collyer, Lynn, Mass., and the treasurer J. G. Morton, Boston.

Messrs. F. Wilkinson & Co., 25 Cornbrook Road, Manchester, England, have been appointed agents for the "Steamobile" in England by the Steamobile Co. of America, and the second shipment of vehicles was recently made. The company has also received a cable order from them for four machines more.

The Stearns Steam Carriage Co., Syracuse, N. Y., has just published a new catalogue which illustrates and describes its various styles of steam vehicles, including, dos-a-dos, runabout, semi-touring car, delivery wagon, surrey and station wagon. The engine is also fully described. Copies are sent free on application.

The International Power Vehicle Co., Stamford, Conn., sends a catalogue illustrating the kerosene oil engine built by them. This engine is of the two-cycle type, and explodes its charge by spontaneous ignition. One cut in the catalogue shows the motor connected to a friction disk transmission, presumably for automobile use.

Mr. P. C. Lewis, manager of the Automobile Headquarters, Boston, reports sales of over sev-

enty automobiles thus far this season, aside from the storage and repair business. About sixty machines are now in stock. The Headquarters are eastern agents for the Knoxmobile, the St. Louis, the Gasmobile, and the De Dion-Bouton.

The Buffalo Automobile Station Co., Buffalo, N. Y., has been incorporated, with a capital stock of \$10,000. Wm. Hamlin, Chas. Wesley, Frank A. Babcock, Frank A. Babcock, Jr., Buffalo, and Jacob Amos, of Baldwinsville, are the incorporators. The company will manufacture electric automobiles and maintain a station for charging them.

Among the recent sales made by the Waverley Department of the International Motor Car Co., was an electrical runabout to Gen. Lew Wallace, the well-known author. The vehicle is painted in a rich maroon, with leather upholstery throughout. The Waverley Department is fitting electric brakes to all of its 1902 models, which it is claimed makes the vehicle readily controlled under all conditions and without having recourse to the foot brake.

Under the name of "Simplex" magneto generator, the Specialty Machine Co., 106-108 Canal St., Cleveland, O., is marketing a generator for gas engine ignition purposes. The armature is encased and runs normally at 1,000 to 1,200 revolutions. The makers state that the volume of current delivered by this machine is very low, and the voltage exceptionally high, being over 500 volts at 1,200 revolutions, and they state that this renders a spark coil and battery for starting unnecessary.

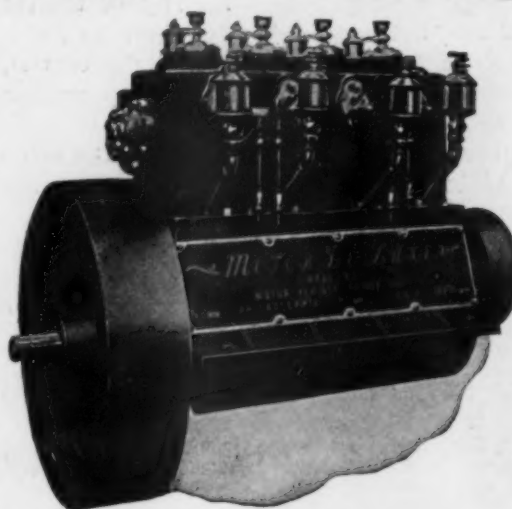
C. A. Coey & Co., 177 La Salle St., Chicago, have erected on automobile repository at 5311-5313 Cottage Grove Ave. The building is fully

GOOD MACHINE TOOLS

We can equip your plant with up-to-date machine tools of any description, our stock of both new and second-hand tools is considered the largest in the country. Our factory equipment is complete for all kinds of experimental work, strict privacy if desired. Gear cutting a specialty.

.....WRITE US YOUR WANTS.

The Garvin Machine Co., Spring & Varick Sts., N. Y.
51 No. 7th St., Phila., Pa.



The Motor de Luxe

S. H. P.

Four Cylinders, Shifting Spark
on all Cylinders without a Chain.

Especially adapted to the
Touneau Type Automobiles

**Motor Vehicle Power
Co.** 1227 SPRINGGARDEN ST.
PHILADELPHIA

equipped with charging plant for electric vehicles and machine tools for all ordinary repairs. In addition, they will instruct patrons how to operate their machines, and expect also to take the agency for a few first-class machines. The location is opposite Washington Park and nine blocks from Chicago University.

Dealers in Denver and San Francisco have decided to hold local automobile shows. The date of the Denver show has been definitely decided for May 12th to 17th, inclusive, in Coliseum Hall. The San Francisco show, it is thought, will be held the first week in June, but the exact date has not been decided. Both shows are to be under the management of G. A. Wahlgreen, of Denver, Colo., to whom applications for detailed information should be addressed.

The Automobile Storage & Repair Station, Buffalo, N. Y., has been moved to the rear of 523 Delaware Ave., the entrance to the station being through Virginia Place, which runs between Allen and Virginia Sts. The station will be fully equipped with machinery for repairs, and a complete line of supplies will be kept on hand. It is proposed to pay special attention to touring automobilists while stopping over at Buffalo. Mr. D. H. Stow is the manager of the station.

The laws recently enacted at Albany, N. Y., require that every vehicle shall have the initials of the owner's name conspicuously posted upon the vehicle in letters at least three inches high. Failure of the part of an automobilist to comply with the law renders him liable. To supply the demand from automobile owners, Chas. E. Miller, 101 Reade St., New York, has placed upon the market a hanger made of highly finished leather with three-inch initial letters made of brightly polished aluminum. The hanger is further described in Mr. Miller's advertisement on another page of this issue.

The Locomobile Company of America, New York, has received advices from its London office

to the effect that a style No. 2 Locomobile arrived third in the "Paris-Nice Tour." The distance of 1,040 kilometres, or about 650 miles, was made in 46 hours and 20 minutes actual running time. The Locomobile was preceded by two cars, one of 20 HP. and the other of 16 HP. Out of the forty cars that started from Paris fifteen arrived. The carriages taking part in this tour were those going from Paris to Nice to take part in the trials to be held in the latter city. The company has also just received a cablegram from Mr. Ginder, one of its representatives, stating that at the trials at Nice a Locomobile had made a 10-mile hill climb in 32 minutes.

The Board of Directors of the Locomobile Company of the Pacific, 1022 Market St., San Francisco, recently elected the following officers for the ensuing year: President, Chas. C. Moore, San Francisco; Vice-Presidents, S. T. Davis, Jr., New York, and E. P. Brinegar, San Francisco; Treasurer, L. N. Breed, Los Angeles; Secretary, J. E. Havemeyer, New York; Assistant Treasurer, J. A. Avis, San Francisco. The company is making arrangements to handle all styles of automobiles, covering the Pacific coast and the Hawaiian Islands through its branches and agencies. The line of vehicles will include both French and American manufacture. The company will have a supply department, in which it will handle specialties, including a line of leather automobile clothes, French horns, lamps, and miscellaneous supplies. The headquarters of the company are commodious, and located in a prominent part of the business section.

Patents.

List of Automobile Patents Recently Granted.

- 695,562—Bicycle motor. Issued to R. M. Keating.
- 695,804—Changeable speed gearing. Issued to V. V. Torbensen.
- 695,803—Motor vehicle driving gear. Issued to A. Govan.
- 695,541—Motor vehicle driving mechanism. Issued to L. Creanche.
- 695,802—Motor vehicle. Issued to L. J. Dirand.
- 695,985—Motor vehicle. Issued to V. V. Torbensen.
- 696,210—Automobile driving gear. Issued to P. Steinbauer.
- 696,231—Carbureting device for explosion engines. Issued to J. Fillet.
- 696,233—Horseless carriage emergency brake. Issued to W. D. Goold.
- 696,001—Motor cycle frame. Issued to V. H. Bendix.
- 696,121—Motor vehicle. Issued to F. A. Waldron.
- 696,143—Motor vehicle. Issued to R. M. Hunter.
- 695,950—Motor vehicle running gear. Issued to P. K. Stern.
- 696,477—Automobile. Issued to E. J. Pennington.
- 696,600—Automobile. Issued to W. E. Trufant.
- 696,478—Automobile condenser. Issued to E. J. Pennington.
- 696,457—Carbureter. Issued to Lane & Davenport.
- 696,900—Carbureting device for explosive engines. Issued to McCormick & Miller.
- 696,771—Rubber tire for vehicle wheels. Issued to J. M. Sweet.
- 696,596—Motor vehicle. Issued to W. W. Robinson.
- 696,634—Motor vehicle. Issued to E. J. Pennington.
- 696,975—Vehicle propelling and brake mechanism. Issued to O. C. Howes.
- 697,153—Variable speed gear for motor vehicles, cycles, etc. Issued to J. R. Madan.
- 697,720—Automobile. Issued to H. K. Holsman.
- 697,722—Automobile frame. Issued to G. A. Hunt.
- 697,807—Carbureter. Issued to C. L. Champion.
- 697,597—Tire inflater. Issued to H. K. Austin.
- 697,646—Vehicle motor. Issued to C. D. Mosher.
- 697,945—Motor vehicle running gear. Issued to Knox & Jones.

Fournier=Searchmont

A RECORD FOR AMERICAN CARS

First Two American Cars and First Two 4-Passenger Cars to Finish in the Long Island Endurance Contest.

WE entered three cars, two being our latest model Tonneau, carrying four persons and one being our regular Touring Car carrying two persons. All finished the entire 100 miles without a stop (except to repair one punctured tire, not penalized under the rules).

Our cars were too fast to conform to the speed limit of the contest, **all finished ahead of time.** The two Tonneaus were the first American Cars and the first four passenger cars to finish, notwithstanding the fact that one of them stopped 29 minutes to repair a tire.

One Tonneau averaged better than 20 miles an hour, breaking the record of American Cars over this course, the other better than 19 miles an hour, while the Touring Car, the fourth American Car to finish, averaged about 18 miles an hour.

The only cars to finish ahead of ours were high-powered French Racing Cars with rear seats removed, carrying only two persons.

In exchange for your name we will send you much fuller description of the contest and our illustrated catalogue.

The Fournier=Searchmont Automobile Company

Agencies: JOHN WANAMAKER, New York, Philadelphia
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Cards "Wanted" and "For Sale" inserted under this heading at two cents per word, agate measure. Minimum price, fifty cents.

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Automobiles stored, charged and repaired. BROADWAY AUTOMOBILE STORAGE CO., 332 South Broadway, Los Angeles, Cal.

WANTED.

Young man desires position with manufacturer of automobiles in the U. S. Has had some practical experience, and is capable. Address "W. S.," care THE AUTOMOBILE, 150 Nassau St., New York.

WANTED

Light automobile gasoline engine castings, double cylinder, water cooled, 4x4-in. single cylinder, near 4½x5. Also automobile fittings. Address A. B. BARTLETT, West Milford, W. Va.

FOR SALE.

Toledo steam carriage with top. Used less than three months. Price \$600.00. Address 442 M St., N. W., Washington, D. C.

FOR SALE.

An eight horse power Panhard automobile. Practically new French hansom at largely reduced price. Can be seen at Wanamaker's Stable, 57th St., near Lexington Ave., New York City.

FOR SALE.—MOBILE.

Has top, curtains and apron. Run less than 500 miles. As good as new. Kelly generator and burner; tank filler; auxiliary boiler pump; extra tire; extra gasoline regulator; special double-acting brake, holds perfectly either way. Owner wishes to get touring car. Price \$600. Address BARRY MacNUTT, Bethlehem, Pa.

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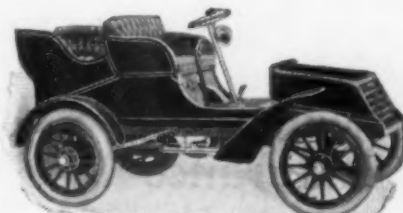
THE AUTOMOBILE

150 Nassau Street

New York

WINTON

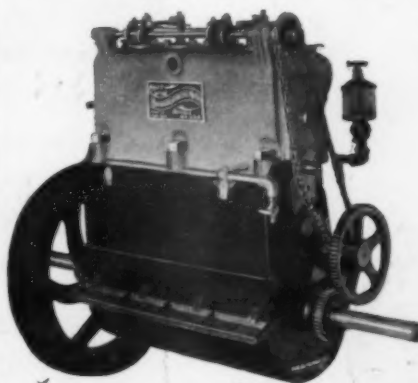
In the Long Island 100-mile Non-stop Endurance Contest two WINTONS entered and they both won Blue Ribbons. One of the two captured first honors in the Hill Climbing Contest (Class D).



Touring Car, Tonneau Detachable. Price Complete, \$2,000

The Winton Motor Carriage Co., Cleveland, O., U. S. A.

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When Buying a Motor:

Why not get a good one?

Which runs; Yes a good steady worker.

We've a prize-winner; Public admiration we've won.

Write for catalogue and testimonial book.

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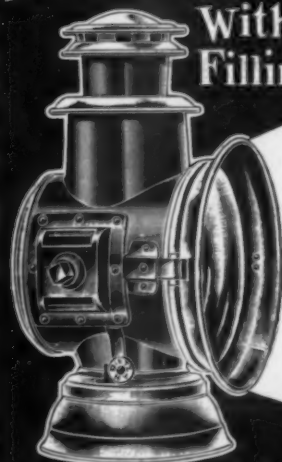
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With One Filling.



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The Dietz Lamp possesses all of these qualities. The best way to prove (or disprove) this statement, is to try it. We will take all the risk.

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The Most Practical Automobile in the World

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9-HP. 36-in. Wheels, 2,000 Lbs., \$1,800.



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9-HP. 36-in. Wheels, 1,900 Lbs., \$1,500.

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A LOCOMOBILE climbed Mt. Washington.
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A LOCOMOBILE climbed Eagle Rock Hill, N. J. in the best time.
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It is not surprising therefore that a 3 1-2 H.P. Locomobile should win the Class A Cup in the Hill Climbing Contest in the Long Island Endurance Run.

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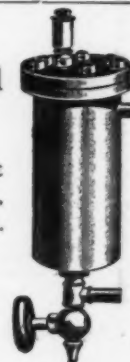
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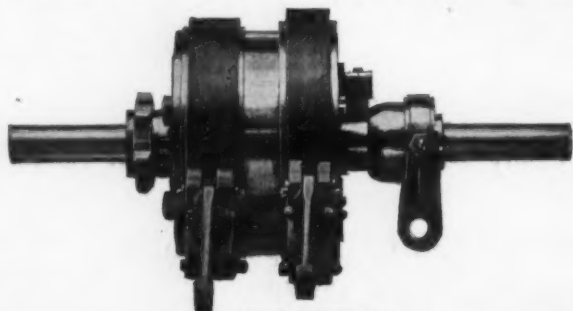
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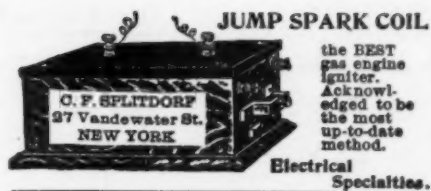
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For all types of Automobiles. Indispensable to the Autoist.

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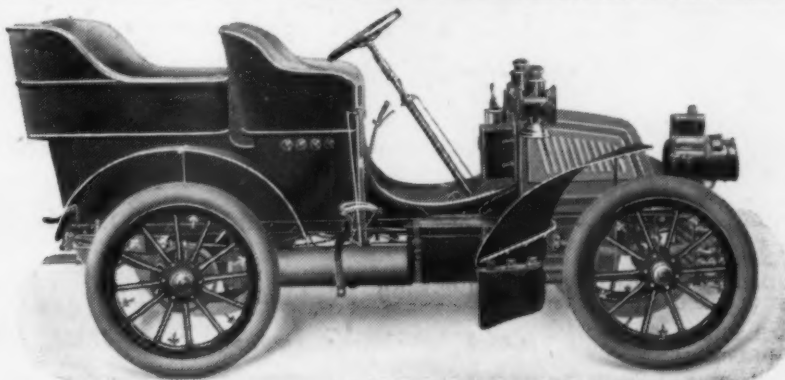
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Flexible Power Transmission Works right on rough roads.
Long Wheel Base Rides easily anywhere, saving wear and tear throughout the machine.

Low Centre of Gravity Safe on "side hills" and short turns.

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Spells the highest development yet reached in American Automobile construction.

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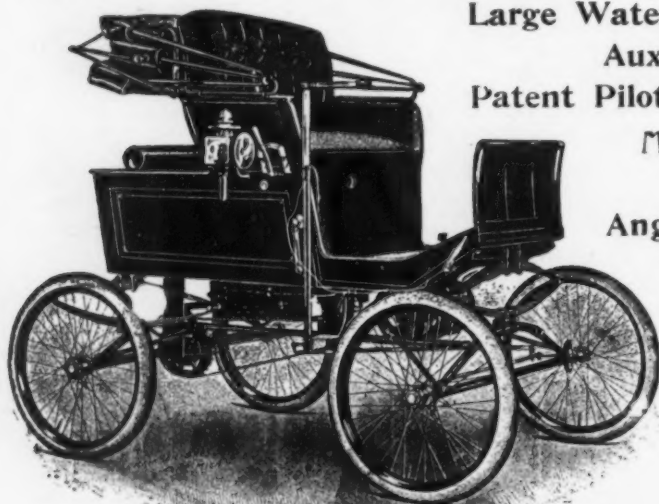
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\$550 and \$600

Noiseless
Comfortable
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CREST MANUFACTURING CO.
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THE CONRAD STEAM CARRIAGE.



Large Water Capacity.
Auxiliary Throttle.
Patent Pilot Light.
Machinery Hung
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Angle Iron Frame.

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YOU CAN RIDE HOME IN IT



DARRACQ CARS

DELIVERED IMMEDIATELY

THE "DARRACQ" RECORD

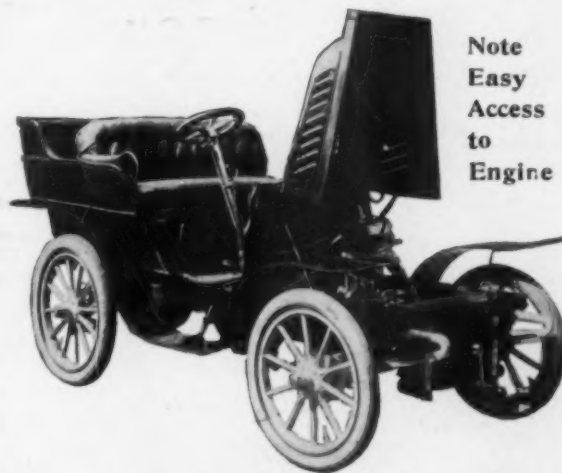
Winner of 47 Firsts out of 52 Races in 1901.

Winner at Annual French Hill Climbing Trials at Gaillon Hill, November, 1901.

The "DARRACQ" 16 H.P. cars were **WINNERS** with the remarkable speed up an average 8 per cent. grade of **36 MILES** an hour, defeating all 40 H.P. Pihards and 50 H.P. Napiers.

The New York "Herald" December 22, 1901, by cable from Paris, says, Gabriel on a "Darracq" Car broke the record for light car for a flying kilometer and mile in $39\frac{4}{5}$ seconds and 1 minute 3 seconds, respectively, and a standing mile in 1 minute 13 seconds.

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Note
Easy
Access
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Engine

First five in out of 15 contestants at Nice, April 7, 1902, 35 miles per hour on 10 per cent. grade.

American Darracq Automobile Co.

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Heavy Running Gear
Two Double Acting Brakes
New Indestructible Burner
Large Fuel Supply
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Engine Encased
Superheated Steam



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at any Desired Pressure
Folding Dash
Automatic Lubrication
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Steam Air Pump
Steam Water Pump

Wheel Base, 68 ins. Weight, 1250 lbs. 4 Passenger Open Front—2 Passenger Closed Front.

PRESCOTT AUTOMOBILE MFG. CO., 83 Chambers Street, NEW YORK CITY

Strongest

Handsomest

Most

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The "Steamobile"

Write for Illustrated Catalog to....

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Satisfied Customer
is worth more than any gen-
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make.

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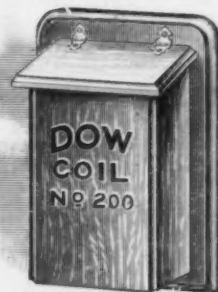
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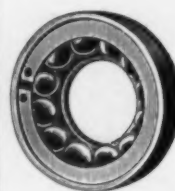
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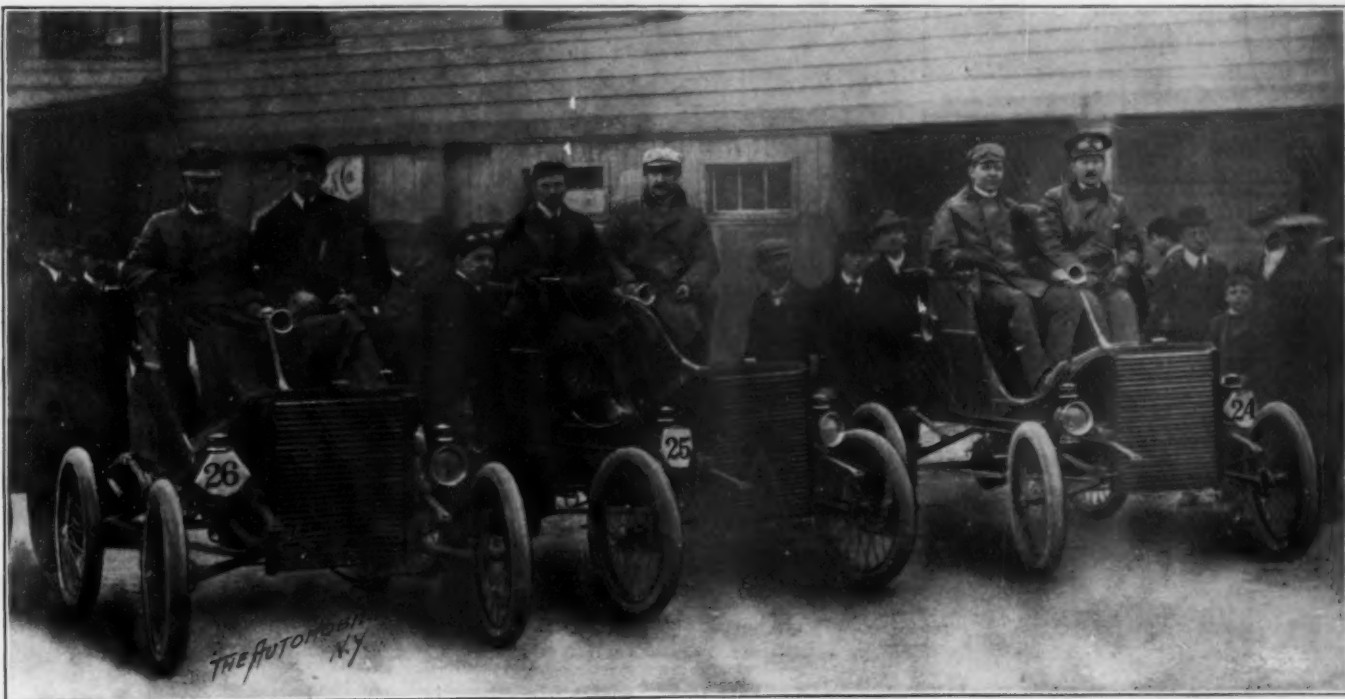
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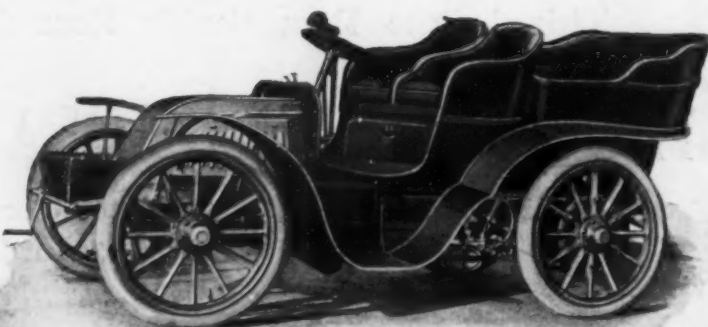
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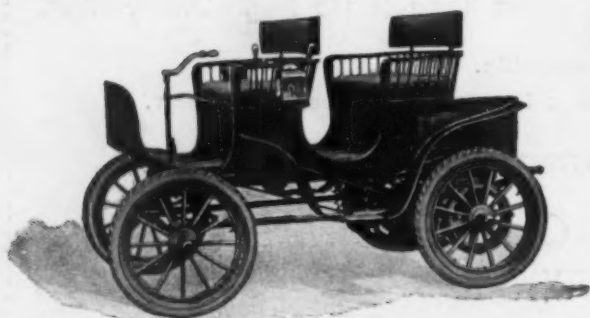


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NOTICE.

There was no volume 5 of "The Automobile" issued.

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